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USSR Report

NATIONAL ECONOMY

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FURTHER DETAILING OF NEW MANAGEMENT CONCEPTS REQUIRED

Moscow EKONOMICHESKAYA GAZETA in Russian No 6, Feb 87 p 21

[Article by A. Novikov, "GAZ" deputy general director for economics, and A. Sobrovin, candidate of economic sciences: "The Principle Is To Charge It to Gross Income"]

[Text] As is well known, as of January 1987 seven ministries--Minkhimmash, Minneftekhimprom, Minlegprom, Minpribor, Minavtoprom, Minmorflot, and Mintorg, as well as 37 associations and enterprises in other sectors, began to operate under the conditions of full cost accounting (khozraschet), self-financing, and the pay-as-you-go principle.

But in our view it would be incorrect today to simply wait for the results from the new methods of economic activity. Now that we have begun large-scale assimilation of new approaches in the conduct of economic activity, we need at the same time to think about their development, objectively appraising what has been done, and to seek and find new procedures and methods of solving the problems that arise.

It is also important to look at the problem from this angle because it helps to avoid preset patterns in improving the economic mechanism, to get away from attempts to cram the entire diversity of production into a single particular type of cost accounting.

In the discussion of the problems of full cost accounting, the pay-as-you-go principle, and self-financing the principal attention has been concentrated on the problems of setting and applying standard economic rates and allowances and various types of payments of associations and enterprises.

In our view the search for the best version of intraplant cost accounting has every right to be among the key questions. Unfortunately, this topic has not so far been touched upon in the discussion. But it is clear that without up-to-date economic methods at the level of the enterprise itself, methods appropriate to the conditions of full cost accounting, the pay-as-you-go principle, and self-financing, we will hardly manage to achieve what we anticipate today from the new approaches in the conduct of economic activity.

One of the versions of new cost accounting of production associations, in which the considerations expressed above are taken into account to a certain extent, has been undergoing development for a number of years now in the department of the organization and methods of management of social production of the School of Economics of Moscow State University jointly with specialists of the economic services of the associations "KamAZ" and "GAZ."

What Does the Completeness of Cost Accounting Consist of?

Cost accounting will become truly complete if it is reflected in the work activity of every member of the collective, if it is understood and accepted as the basis of his work, if it creates in him a real sense of being the true master of production and an interest in the job he has to do. The system of remuneration has great importance here.

Under the present system the wage and rate schedules, the base wages and salaries, represent 50-60 percent of all the money which the workers of associations and enterprises receive. This portion does not have much to do with the current performance of the work collective; it is as though guaranteed by the position one holds, by the level of one's qualifications, by one's length of service.

The other part--various supplements, bonuses, and other payments--is aimed at achieving motivation for attainment of the best end results. Some payments provide the wherewithal for the social welfare achievements of our society. For example, payment of interruptions of work for mothers nursing infants, of leave to go to school, and the hours allowed as a benefit to adolescents. But most of the designations are special payments and bonuses whose purpose is to stimulate particular efforts of the worker in attainment of the production goals that have been set.

As experience has shown, the system of incentive payments is complicated and confused. For example, at the Gorky Motor Vehicle Plant there are about 40 different payments, bonuses, and supplements. Even a specialist does not always manage to understand the nature of this kind of system, not to mention the ordinary worker. A number of payments have ceased to play an active role as incentives. For instance, the bonuses for fulfillment of output quotas--known as the "progressive"--is quite often regarded as an inseparable part of the wage, a mandatory element of it. Or, say, bonuses for conservation of certain physical resources against technically substantiated standard rates of consumption.

On an annual average basis during the last 5-year planning period they amounted to only 0.1 percent of all money payments and 0.9 percent of bonuses charged to the material incentive fund, while bonuses for creating new technology, putting it into production and applying it represented 0.3 and 2.8 percent, respectively. With such incentives it is hardly possible to perform the tasks they address.

One might go on with the list of such examples. Yet it is clear that the present system for motivating efficient work is typified by great complexity,

by little connection to the end results of work, by excessive specialization, and by the insufficiency of the impact of the various types of bonuses, payments, and supplements. As a result the personnel of enterprises and associations "receive," but do not "earn."

The problem is to effectively link the resources earned by the collective and each worker to the results of work in a manner that is simple and clear to everyone. Now that the question of reorganizing wages has been settled, it is also important to use various types of supplements and bonus payments to simplify and at the same time strengthen the impact of financial elements on the aspiration of workers to achieve high qualitative results. Wages must also consist of two parts in the system of full cost accounting. The first would be the fund of the guaranteed wage. This is payment for the worker's qualification, his skill, his experience (within the limits of the rate schedules, piece rates, salaries, job rates). Calculations show that the size of this portion is about 56 percent, say, for "GAZ."

The second part, which we might call the unified fund for supplemental remuneration, is formed as a remainder, as the result after the association or enterprise has made all settlements from its proceeds. This is the final assessment of how the collective has done. This fund must be distributed according to a regulation adopted by the collective of the association. That regulation must also reflect certain mandatory payments defined by legislation.

It does not make sense to adhere to the present fractional designations in the bonus system when the resources earned are being distributed, since the collective is quite able to make an objective general assessment of the work activity of each particular worker. The desire for a larger volume of output and higher labor productivity will be a natural thing, just as it will be to strive for economical consumption of all resources. After all, both things directly augment the total earnings.

Relations With the Ministry and With the Budget

Now let us take the financial support for scientific-technical development of production. The procedure in effect in this area is cumbersome and sluggish. Funds are allocated for these purposes from more than eight sources. But not one of them, nor all of them together, properly guarantee acceleration of scientific-technical development. Each of them also has a separate "existence" at the higher levels. The amounts of these resources have no visible direct relation to the performance of associations and enterprises. And certain sources of financing do not represent resources of the association or enterprise at all, but are centralized at the level of the sector or branch and are then returned. In essence the present system for financing enterprises and associations is quite advantageous and comfortable only for the personnel of agencies and departments at the level of the sector or branch, since it gives them something to do and to a certain extent spares them staff reductions.

In a system of full cost accounting there also have to be changes in methods of covering expenditures for social welfare and cultural programs and housing

construction. Today funds for those purposes come out of the respective fund, which is formed according to a standard rate of growth for each percentage point of the rise of labor productivity, along with state resources for housing construction.

/In our view, both the production development fund and the fund for social welfare and cultural programs and housing construction should be formed in the context of full cost accounting by direct transfer of resources from the revenues of associations and enterprises./ [In boldface] It is a particularly urgent problem for "GAZ" to form these funds directly, since it is carrying on large-scale reconstruction and has undertaken practical implementation of the initiative approved by the Politburo of the CPSU Central Committee to provide every family its own housing unit by 1995. This means building 40,000 housing units, or 200,000 m^2 of housing per year.

/A revamping is also needed in relations which associations have with the state budget, the ministry, and regional management authorities./ [In boldface] Today both deductions credited to them and also what is received from them follow a great number of channels; they often duplicate one another, and they are not interconnected. For example, at "GAZ" last year transfers were made to the budget through 14 channels, and receipts from the budget came through 4. Funds went to the ministry along almost 10 channels, and they came back to the association along 8.

/It would be most logical from the standpoint of full cost accounting to establish a definite standard rate of transfers from the income of enterprises in order to guarantee the volume of resources which it is economically justified for the state, the ministry, and the region to receive./ [In boldface] For instance, under the system being proposed the turnover tax, the charge on assets, the water charge, and several others would remain of the 14 channels of transfers made to the state budget. Such deductions as the unassigned remainder of profit would no longer have any meaning. The same thing applies to transfers made to the ministry. The ones which would by and large remain here would be the contributions to the reserves of the branch or sector as a whole and the payment for rendering services (for example, improvement of qualification).

/The plan and the procedure for distribution of income are called upon to link together all the elements of full cost accounting./ [In boldface] The mechanism whereby full cost accounting of the basic production link function might in our view be as follows in general outline.

Procedure for Distribution of Income

The association is assigned a plan for production of principal products in physical terms, including products representing new technology, deliveries for export, covering the 5-year planning period, with a breakdown by years, in constant prices. The volume of marketed output would be determined by computation for purposes of evaluating fulfillment of obligations to make deliveries in accordance with contracts concluded and job orders issued. Guaranteed funds for material and technical resources would be allocated to cover that

volume at the established standard allowances. The association's income would be formed on the basis of proceeds from the sale of products and services. All outlays for reproduction and social welfare development would be covered from them at standard rates that would be stable for the 5-year planning period.

This procedure for distribution of income presupposes that payments to the budget, the ministry, and regional management authorities would be made first, accounts would be paid to suppliers, depreciation would be computed, accounts would be settled with the bank, forfeits, penalties, and fines would be paid, and finally, the fund for the guaranteed wage would be formed, as a rule within the limits of minimum wage-salary amounts.

The funds remaining after the first round of settlement are the real income of the association, and it is distributed into three parts: deductions would go to the production development fund, to the fund for social welfare and cultural programs and housing construction, and finally, to form the unified fund for supplemental remuneration.

The procedure for forming all the funds of associations would be established by them independently; the specific purposes for which the resources would be used would be discussed and approved by the work collectives.

The growth of payments to workers would be achieved by increasing the fund for supplemental remuneration formed as the remainder in the distribution of income. This would connect it directly to the fulfillment and overfulfillment of planning targets, the rise of production efficiency, and the level of organization of production. Consequently, there would no longer be a need to assign the association targets for the rise of labor productivity, reduction of production cost, and reduction of standard rates of consumption and rejects. The systematic improvement of these indicators would become the natural real source for reduction of expenditures and growth of the fund for supplemental remuneration, and consequently, for the earnings of each worker.

Should the association fail to fulfill the targets of the plan or assignments contained in a contract, it would have to reimburse the losses to consumers in the form of payments within the limits of the fund for supplemental remuneration, the fund for technical development, and the social fund.

Implementation of these proposals presupposes the need to conduct an economic experiment in one or several associations. Calculations made in "KamAZ" and "GAZ" demonstrate the fundamental possibility of carrying out the proposed version of full cost accounting. An additional argument is that for several years now remuneration from gross income has been used with great success in agriculture. It is time to test this system in industry as well.

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MEASURES TO IMPROVE SMALL ENTERPRISE OPERATION WEIGHED

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 11, Nov 86 pp 79-85

[Article by I. Golovin, senior scientific associate of the Council for the Study of Productive Forces under the USSR Gosplan, candidate of technical sciences, and A. Pevzner, sector chief of the Scientific Research Institute of Planning and Normatives under the USSR Gosplan, candidate of jurisprudence, Honored Economist of the RSFSR: "Small Enterprises in the System of Management of Public Production" (a discussion)]

[Text] To reduce significantly the time periods for introducing technical innovations and promptly take into account changes in the demand for products--these factors in acceleration have become the demand of the times. In many cases, small, well equipped enterprises and productions could become an important means of providing for rapid assimilation of the output of individual kinds of products, particularly low-tonnage and small-series products. In order to realize more fully the possibilities and advantages of these enterprises, it is necessary to introduce a complex of measures during the process of the work that is conducted for improving the entire economic mechanism.

Perfecting the organizational structures of industry and improving the composition of industrial enterprises constitute an important factor in the intensification of public production and the acceleration of socioeconomic development on the basis of scientific and technical progress. Rapid and flexible reaction to changes in public demand, reduction of the time periods for assimilating and recouping capital investments, and completely accounting for social, especially demographic, conditions when distributing productions, with a simultaneous increase in the volumes of output of products necessary to the national economy, make it necessary, as was pointed out in the Basic Directions for the Economic and Social Development of the USSR During 1986-1990 and the Period up to the Year 2000, "to provide for an optimal combination of large, medium-sized and small specialized enterprises."[1]

It is generally accepted to include among small enterprises legally independent plants and factories, and sometimes plants (factories) that are not corporate bodies and are structural units of production and scientific production associations if the sizes of their plants, in terms of one of several indicators, do not exceed some arbitrarily selected amount. Attention

is usually paid to the number of workers (up to 200), and according to this indicator up to 46 percent of the independent enterprises are small ones.[2]

One should also distinguish among small enterprises according to their production profile: some produce products for the population mainly by processing local raw material while others specialize in the manufacture of sometimes fairly complicated items that are delivered to other consumers. The peculiarities of various types of small enterprises should be taken into account when creating them, changing their profiles, reconstructing them and organizing their current economic activity.

But the problem of small enterprises and productions touches upon material production considerably more broadly and deeply than might seem to be the case at first glance. In the branches of industry, the agroindustrial complex and consumers' cooperation there are hundreds of thousands of small productions in the form of plants, factories, workshops and various service and auxiliary shops, sections and other subdivisions of independent enterprises and organizations. According to an rough estimate, the proportion of independent enterprises in the overall number of small plants, factories and industrial productions amounts to only 5-10 percent.

The frequently encountered negative attitude toward small enterprises is justified to a certain degree. For the majority of them are poorly mechanized, they usually have obsolete equipment, they are not sufficiently staffed with highly qualified specialists and they are distinguished by closed specialization in one object, that is, they have the entire range of not only basic, but also auxiliary and service productions. It is obvious that the results of their economic activity are extremely poor: as a rule, the level of labor productivity is unsatisfactory, the proportional expenditures of material and financial resources are significant, and the quality of the products that are produced leaves something to be desired. This usually serves as an argument against the independent existence of small enterprises. It is not difficult to see, however, that the cause and effect are being confused here. The low level of production and product quality of these enterprises is mainly the result of an inattentive attitude toward them as objects of secondary importance. Largely under the influence of the megalomania that is based on the idea of the absolute superiority of large enterprises, the majority of resources are used for their construction and development.

Under the conditions of the increasingly complete economic assimilation of local natural resources while there is a shortage of labor force in many regions and the appearance of new achievements in the area of technical equipment and technology whose results can be utilized effectively in both large-scale and small-scale productions, it has become more significant to optimize the production apparatus of branches and regions according to the sizes of the enterprises. It was noted at the 27th CPSU Congress that ". . . in many cases small, technically well equipped enterprises have their advantages. They can take technological innovations and changes in demand into account more rapidly and flexibly, they can satisfy the needs for small-series and unit production more efficiently, and they can utilize free labor resources better, especially in small cities."[3]

In order to determine the optimal sizes of enterprises, organizations and the production units that are included in them, one usually uses calculations of the relative economic effectiveness of capital investments with the minimum of reduced expenditures calculated for the entire proposed period of operation of the enterprise, either by the year or by individual periods of its development. While recognizing the acceptability of this solution to the problem for certain productions with a low level of material-intensiveness, when it comes to products with a high value for which the transportation factor is not of essential significance, certain authors at the end of the 1960's noted shortcomings in this approach.[4] The main one is the direction toward achieving the branch economic effect while not sufficiently accounting for the national economic effect. The reduction of the production cost and capital-intensiveness per unit of output, which usually accompanies an increase in the sizes of productions of the same kind, leads in a number of cases to increased expenditures on the delivery of raw material to the processing enterprise and the delivery of the final product to the consumer. For example, in the mixed feed industry when there is a demand for mixed feeds and to increase the daily output of the enterprise from 300 to 1,050 tons, that is, by a factor of 3.5, the cost of processing 1 ton of raw material and the final capital investments decrease by 75 percent, but transportation expenditures on the delivery of 1 ton of raw material and final product increase by almost 90 percent. As a result, the total expenditures for large enterprises remain practically the same. A reduction of the capacity of the enterprise by a factor of 3 (to 100 tons per day) reduces not only the transportation expenditures as a result of a sharp reduction of the shipments, but also the proportional capital investments, because of the utilization of less expensive local construction materials. But the greatest economic effect here is achieved as a result of the reduction of the cost of local raw material and its losses, and also the use of agricultural wastes, along with improvement of product quality and the balance of the feeds.[5] During the past decade, along with the creation of other large and small enterprises, this has contributed to the creation of a considerable number farm and interfarm enterprises and productions.

The meat industry has shown a need for more complete accounting for procurements of livestock, the existence and quality of highways, the transportability of raw materials and products, the volume of consumer demand in the zone of consumption, and other factors. As a result, they have begun to develop plans for small refrigerated butcheries.

It should be noted that intraproduction or branch factors such as increased unit capacities of basic equipment and reduction of expenditures on intraplant transportation and other expenditures for providing service for production, as a rule, are oriented toward increasing the sizes of enterprises. A reduction of expenditures on outside transportation and losses during transportation of raw material and final products, the time periods for the construction and assimilation of planned capacities, the various local conditions (shortages of labor resources, water, and so forth), changes in the consumer demand the products, and other external, nonbranch factors, on the contrary, generally lead to a reduction of the total national economic expenditures and demonstrate the expediency of reducing the sizes of enterprises.

Incomplete accounting for external factors has led to a situation where a considerable share of the fruit and vegetable raw material is processed at large city plants and not at kolkhoz and sovkhoz enterprises where losses during the delivery of raw materials and prepared products are less. External factors are not sufficiently taken into account in the production of cement and local construction materials either or in the baking of bread, as a result of which small plants for dissolving clumps of cement have not become widespread and hundreds of small brick plants and bakeries have been closed.

The location in rural areas of enterprises for processing and storing agricultural products and producing local construction materials, feed and mixed feed plants and shops, and also affiliates of enterprises of other branches of industry contribute to eliminating seasonal fluctuations in the employment of agricultural workers, and, in individual regions, to drawing free labor resources into production. In the cities, "pendulum" migration is decreasing and there are greater possibilities of utilizing in public production the labor of pensioners, students and other groups of the population who are able to work part time.

A more precise disclosure of branch and regional factors and their economic evaluations should be directed primarily toward the organization of cost accounting enterprises and productions which would exert an influence for increasing labor productivity as much as possible. The development of enterprises of optimal sizes would be accompanied (depending on their peculiarities) by a reduction or an increase in the number of large and medium-sized enterprises as well as small ones.

Among the factors influencing the increased effectiveness of production, the time factor has assumed basic significance. The savings on capital investments achieved by increasing the sizes of enterprises has frequently come to be eaten up by the losses resulting from the lengthy time periods for reconstruction, expansion, construction and assimilation of new production capacities. Under conditions where the generations of technical equipment should change on an average of every 10-12 years, improvement of the organization of production should contribute to accelerating scientific and technical progress, that is, it should provide during the period of the creation of the next, more effective generation of technical equipment not only for introducing the preceding generation but also for completely recouping expenditures on its creation.

At the same time, the construction, reconstruction and technical reequipment of individual enterprises, which in practice lasts up to 10-15 years, have become incommensurable with the necessary time periods for updating equipment and, along with the time periods for recouping capital investments, reach 15-20 years.

Reproduction processes take considerably less time in small enterprises and productions than they do in large ones. Because of the sharp reduction of the time periods from the beginning of the development of the plan until the production of the product and the relatively small expenditures on technical supply and expedient changing of profiles, and also the rapid return on

capital investments, small enterprises and productions can serve as an effective lever for rapidly and efficiently saturating the market with goods and services.

But there are a number of shortcomings in the organization of the construction and reconstruction of small enterprises and productions. First of all, they have longer normative time periods for construction . In local industry, for example, plants for manufacturing locks and hardware, galvanized dishware, toys, and haberdashery items with an annual production volume of 1-2.5 million rubles, according to the norms, should be constructed in 12-17 months, and a large share of this time goes for constructing buildings while the time periods for the installation of equipment do not exceed 2-4 months. There is an even longer normative time period for constructing small enterprises of light industry and other branches of industry: for a cotton cleaning plant with two flow lines--28 months; a sewing factory with a capacity for a normative output of 1.5 million rubles per year--24 months; an automotive repair plant--27 months; and, taking into account the normative time required for the assimilation of the planned capacities, these figures are 37, 32 and 39 months, respectively. Thus the overall calculated time periods for planning, construction (reconstruction) and assimilation of small enterprises extend to 4-5 years, and actually in individual cases--up to 5-7 years and more, although the normative time periods for the installation of equipment do not exceed 5-15 months.

Obviously, the main direction for creating the system of modern small enterprises is not the construction of new ones but the reconstruction and technical reequipment of the immense number of existing ones and the utilization of available buildings and structures. In these cases a double effect can be achieved from acceleration: because of the small sizes of productions and the sharp reduction of the volume of construction and installation work. Moreover, the small amount of capital investments makes it possible to extensively utilize the internal funds of the economic organizations and short-term credit. But the organizational-economic and technical conditions necessary for this have not yet been created.

Because external factors have not been taken into account completely enough, the minimum amounts of production capacities of enterprises and production units that are of optimal sizes have been increased. For example, for producing cog wheels they include 6 million fasteners for annually producing 1,500 items with diameters of up to 6 millimeters, an automotive repair plant for 3,000 motor vehicles a year, and a bakery for producing 20 tons of bakery items a day. Yet even in large population points it would be expedient to construct enterprises for baking bread with capacities of 1, 2, 3, 4 and 6 tons per shift, and for producing sausage and meat products--with capacities of 1,000, 1,250 and 2,350 tons per year, as well as automotive repair shops.

The experience accumulated in Bulgaria in the creation and technical reequipment of small enterprises and productions is interesting. The basic effect is achieved as a result of sharply reducing the time periods for the introduction of new equipment. These time periods average 8-9 months, beginning with the development of the plan and ending with the achievement of the planned capacity, and only in individual cases of new construction do they

last 1-1.5 years. Completing the preparation of planning estimates and construction and installation at the same time, extensively applying standard plans for technological processes, buildings and structures, reducing to an average of 10 percent the proportion of construction and installation work in capital investments as a result of extensive utilization of existing buildings and structures, applying cost accounting and taking other measures for improving the economic mechanism contribute to reducing the time periods. Being one of the effective forms of accelerated technical reequipment, small enterprises and productions that are equipped with the most modern technical equipment return the money invested in them rapidly (the average time for recouping capital investments is 7-8 months).[6]

The experience in creating relatively small enterprises--branches of sewing, footwear, spinning, weaving and knitting factories and enterprises of local industry in the republics of Central Asia--proves that even now the time periods for construction can be reduced to 6-12 months, although the normative time periods are 21-24 months. If a number of additional measures are taken the time periods for construction and assimilation of capacities will decrease sharply.[7]

A reduction of the period from the moment of the investment of funds until products are obtained by a factor of only 2-3 contributes not only to reducing losses from the freezing of capital investments, but also to obtaining profit sufficient to cover capital investments partially or completely within the time necessary for the introduction of capacities with longer reproduction processes.

When determining the sizes of enterprises when changing the economy over to the intensive path of development it is not enough to provide for a minimum of final expenditures. In our opinion, the main criterion should be the maximum national economic effect achieved with minimum final social expenditures. As a calculation indicator we suggest using the ratio between the average annual profit and the final expenditures, depending on the size of the enterprise and taking into account all intraproduction and external factors, per unit of output. The profit indicator for each variant is reduced to the single moment of time of complete repayment of capital investments with the longest variant.

In the reduced expenditures the time factor is taken into account for determining the volume of capital investments for all the variants with the exception of the variant with the minimum time period, and the coefficient of reduction is the difference between the time of completion of the measure according to the variant under consideration and the variants with the minimum duration of the reproduction process.

In order to evaluate the significance of the time factor, the authors have used a calculation of the effectiveness of capital investments when comparing variants with long and short periods of construction (reconstruction) during the time from the beginning of the measure until the large enterprise has completely paid for itself. The variant with the short term is preferable if the time (T) between the completion of its construction (reconstruction) and complete repayment of capital investments according to the long-term variant

is less than the time period for recouping capital investments according to the short-term variant, taking the time factor into account, that is, with

$$T > \text{or} = K_k / P_k E$$

Where K_k and P_k--capital investments and profit of the short-term variant, E--indicator function that takes the time factor into account. Statistical processing of the data for small and medium-sized enterprises of Bulgaria showed that their accelerated development in individual branches of light and the food industry are preferable when T is greater than 0.5-1 year, in machine building--if T is greater than 2 years, and at enterprises of biotechnology, science and scientific service--if T is greater than 3.5-5 years.

Small enterprises contribute to scientific and technical progress also because they make it possible within short periods of time to provide for rapid organization of the production of many kinds of products that are in short supply, mainly lightweight and small-series products. Thus with flotation enrichment of ores of nonferrous metals, it is necessary to have a wide assortment of lightweight reagents and foaming agents whose selective application, depending on the substance composition of the initial material, contributes to more complete extraction of useful components. In order to sharply increase the time periods for storing nonalcoholic beverages one needs only a small quantity of special preservatives. A wide selection of paints and accessories in light industry will make it possible to greatly expand the assortment of products and provide for updating them rapidly.

The organization of the economic activity of small enterprises is rational if it provides for high flexibility of production, the possibility of reorganizing it rapidly with the change in public demand, and accelerated development of the latest technical equipment and technology. This adds certain features to the solutions to such problems of their development as independence, efficient concentration of production, a rise in the technical level of production, and so forth. Obviously, these problems should be resolved in the process of improvement of the control system and management methods. But at the same time, in our opinion, the degree of independence depends mainly on the structure of internal technological ties for producing the final product and the level of specialization and cooperation of production. If a production subdivision manufactures a semiproduct, a large part of which is consumed within the complex, regardless of its size it cannot claim the rights of a corporate body, since this is not required by production conditions, particularly the movement of the product of labor within the complex. Conversely, a subdivision that manufactures the final product can be legally independent and should bear material responsibility for the results of its activity. In this case the size of the enterprise is not of decisive significance.

Thus in order to introduce complete cost accounting, in addition to intraproduction criteria, one must take into account external economic ties. Let us say that a small enterprise is being created on the basis of one flexible automated production system. Such an enterprise can be included in some economic organization and satisfy its needs for certain kinds of parts or be independent and satisfy the needs of many enterprises under the

jurisdiction of various departments located in the same region. An analogous approach is possible in determining the degree of independence of enterprises and other productions that produce batching items, spare parts, components and so forth.

The basis of the production and economic activity of small enterprises should be the plan, formed in keeping with the economic agreements concluded with the consumers of the products, taking into account the demand and the provision of resources.

Other indicators of the plan--profit and its distribution, the volume of capital investments, their structure, the amount of the incentive funds, and so forth--should be calculated independently by the enterprise on the basis of stable economic normatives established by the higher agencies. Naturally, it is expedient to develop the annual and five-year plans for a small enterprise as well as its technical and industrial financial plan according to an extremely limited system of indicators.

The higher agency thus retains powerful levers for influencing the enterprise: control over its economic activity, the establishment and change of economic normatives, the allotment of centrally distributed raw materials, processed materials and equipment, personnel selection, and so forth.

One of the important problems is the organization of the most effective system of cost accounting for small enterprises and industries. The basic point of opponents of the development of the independence of small enterprises is that they are not in a position to find funds for technical development. It seems that these misgivings would be groundless if a number of measures were developed and implemented.

In the first place, the main source of financing the construction or technical reequipment of small enterprises and productions should be bank credit granted under the guarantee of the higher organization. It would be expedient to pay back the credit within 2 or 3 years after the measure has been implemented (taking into account the established overall normative time period for the planning, construction and assimilation of capacities). When granting the credit the bank institution will verify the provision of equipment and other material resources for the measure for which the credit is being granted, and also construction and installation work in amounts necessary for prompt completion of the measure. All profit received by the enterprise after the assimilation of the capacities (with the exception of deductions into incentive funds) should be used to pay back the credit, the enterprise having been released from making payments into the budget during this period.

In the second place, after paying off the credit, in order to provide for accelerated (as compared to large enterprises) updating of the production apparatus, it would be expedient to leave most of their net income at the disposal of small enterprises and productions.

In the third place, at small enterprises it is expedient to introduce the system of the collective cost accounting contract since they do not have large numbers of workers and all of them can be joined into one or two brigades.

In the fourth place, wage funds for workers must be added not in sequence in the first group of payments but from the residual net income according to established normatives, depending on the growth rates of certain indicators and the reduction of expenditures on production. Also, in the wage structure it is necessary to significantly reduce the proportion of the guaranteed part and correspondingly increase the proportion received according to the results of the labor of the entire collective and each worker individually. When there is a shortage of funds for paying wages in a particular minimum amount, it is possible to issue short-term credit that is guaranteed by the higher organization.

The construction or reconstruction of small enterprises and productions should be carried out, as a rule, on the basis of standard plans. Developed by the head planning institutes for various kinds of productions, they will determine the entire complex of production-economic parameters of the enterprise: cost, area of production and nonproduction premises, description of technological processes, composition (concrete list) of machines and equipment, number and structure of personnel, structure of management ties, organization of cost accounting, and so forth. Standard plans should envision equipping small enterprises and productions, as a rule, with modern, highly productive equipment, since only under this condition is it possible to provide for high labor productivity, rapid recouping of capital investments and successful cost accounting activity. Standard plans should be revised regularly in order to bring them in line with the latest achievements of science and technology. The plans must envision extensive utilization of standard construction modules and other standard elements that make it possible to considerably increase the application of plant manufactured elements and, on this basis, to reduce the time periods for construction and reconstruction. In order to provide for construction and installation work, it would be expedient to have a specialized construction organization for a particular territory, and when the share of construction and installation work is insignificant in the reconstruction and technical reequipment of small productions, the internal financing method should be used more extensively.

Implementation of the aforementioned measures will create the necessary conditions for a sharp reduction of the overall duration of the work for planning, constructing and starting up small enterprises and capacities, having limited it, as a rule, to 18-24 months for new construction and 9-15 months for reconstruction and technical reequipment.

At the same time, successful development of small enterprises and productions requires organization of the development, manufacture and delivery of sets of machines and equipment that take into account the peculiarities of large-scale activity. First of all, one should regard the output of equipment for them as just as important as it is for large enterprises. Since our country does not have certain kinds of equipment used in large-scale productions, it will be necessary to cooperate with the CEMA countries, which already have experience in the manufacture of such equipment.

Special study must be given to the utilization of small machine building enterprises and productions, small scientific and design collectives that are

creating new machines and equipment for small-scale productions, and also wholesale trade for them through territorial bases for supply of surplus equipment that has been accumulated at certain large and medium-sized enterprises. It is possible to have a temporary redistribution of equipment if the area at the construction site for which it is intended is not prepared for installation. On the whole, improvement of the system for ordering new equipment should provide for a sharp reduction of the time periods for its delivery.

The ministries, departments and economic and other organizations should devote more attention to supplying small enterprises and productions with raw materials, processed materials, fuel, energy and other necessities in amounts required for producing products in keeping with agreements that have been concluded, and bear responsibility for short supplies. It would be expedient to satisfy the needs of small enterprises and productions for unlimited raw and processed materials on the basis of wholesale trade and agreements with manufacturers or supply organizations. It is necessary to expand the rights of small enterprises concerning means of selling the products that are produced.

The system of management of small enterprises and productions should be extremely simple, and the number of management personnel and expenditures on their maintenance should be minimal. At these enterprises it is necessary to apply more extensively the combination of occupations and positions (including management workers and specialists). The more work the workers do, the higher their pay should be. If an enterprise produces relatively complicated products that require labor-intensive scientific and technical preparation of production, and especially when these products are rapidly being updated, it is necessary to create conditions for utilizing the labor of scientific workers at this enterprise.

Every small, independent enterprise (the more so, every production) should be included in a particular economic system: the main board of the ministry, the agroindustrial association, the construction trust and the administration of the ispolkom of the local soviet of people's deputies, and it should be subordinate to the production or scientific-production association, the institute, the engineering center, and so forth. Including these enterprises on a cost accounting basis in large complexes will provide for an efficient combination of centralization of management and independence of small collectives and will make it possible to utilize the rich production and scientific-production potential of the complex. It would be expedient to establish a simplified policy for forming such enterprises.

At the same time, one must take into account that small enterprises contribute to solving mainly regional branch and interbranch problems. Therefore one should consider the question of creating, if necessary (without adding to management personnel), territorial and interdepartmental organizations for rendering assistance to these enterprises in the process of construction, material and technical supply, provision of transportation and so forth, selection of the most effective plans for their development, and elimination of attempts to violate their rights. These agencies must not replace branch

management and provide direct leadership of the enterprises, but they will be obligated to create favorable conditions for their effective activity.

Taking into account the comprehensive nature of the suggestions which, in our opinion, will provide for successful functioning of small enterprises and productions, it would be expedient to conduct economic experiments in a number of union republics and branches of light and local industry, consumer services, certain branches of the agroindustrial complex, and also machine building for light and the food industry. The determination of the conditions for these experiments could be the responsibility of the Commission for Improving, Management, Planning and the Economic Mechanism.

FOOTNOTES

1. Basic Directions for the Economic and Social Development of the USSR During 1986-1990 and the Period up to the Year 2000, Moscow, Politizdat, 1986, p 91.

2. Boldyrev, V. "Collectivization of Socialist Production," PRAVDA, 19 October 1984.

3. Gorbachev, M. S., Political Report of the CPSU Central Committee to the 27th Congress of the Communist Party of the Soviet Union, Moscow, Politizdat, 1986, p 46.

4. See: "Voprosy optimalnogo razmera predpriyatiy v promyshlennosti SSSR" [Questions of the Optimal Sizes of Enterprises in Industry of the USSR], Moscow, Nauka, 1968, pp 101-113.

5. Garin, V., "A Reliable Mechanism for the New Structure," PRAVDA, 21 January 1986.

6. See: IKONOMICHESKA MISL (Bulgarian), No 8, 1985, pp 22-32.

7. TEKSTILNAYA PROMYSHLENNOST, 1984, No 4, pp 11-13.

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UkSSR GOSPLAN OFFICIAL HIGHLIGHTS REPUBLIC'S 12th FYP

Kiev EKONOMIKA SOVETSKOY UKRAINY in Russian No 10, Oct 86 pp 3-12

[Article by V. Fokin, 1st deputy chairman of Gosplan for the UkSSR: "Ukraine During the 12th Five-Year Plan"]

[Text] In conformity with the task established during the 27th CPSU Congress -- to achieve high rates for the country's socio-economic development -- a sharp improvement must be realized in production intensification, each enterprise and each branch must be reoriented towards making maximum use of the reserves available for economic growth and a conversion must be carried out to the economics of a high level of organization and efficiency, with thoroughly developed production production forces and production relationships by a well organized economic mechanism.

The production potential of the USSR must be doubled by the year 2000. This will make it possible to increase the country's national income and industrial output volume by corresponding amounts. Conditions will be created for implementing a broad social program: real per capita income will increase by a factor of 1.6-1.8, the volume of retail commodity turnover for state and cooperative trade -- roughly by a factor of 1.8, production of non-food goods -- by a factor of not less than 1.8-1.9 and the volume of services provided for the population -- by a factor of 2.1-2.3.

Effective means are required for solving such large-scale strategic tasks. Among them, the party attaches priority importance to further intensifying the scientific-technical revolution and the reorganizational effect it is having on all aspects of modern production, social relationships and on man himself.

The 12th Five-Year Plan must be viewed as being a decisive stage in implementing the party's economic strategy. In the report delivered by M.S. Gorbachev before the June (1986) Plenum of the CPSU Central Committee, emphasis was placed upon the fact that the rates for socio-economic development and the level of national well-being are dependent upon the type of foundation we establish during these years for carrying out fundamental changes in the national economy and accelerating scientific-technical progress The plan for the 12th Five-Year Plan appears to us to be well reasoned and scientifically sound. A new approach for economic development, from the standpoint of quality, is embodied primarily in planning a substantial

increase in the rates of growth for the final results of material production. During the new five-year period, for example, and compared to the previous one, the plans call for the absolute increase in national income to be raised by a factor of 1.57, industrial output -- by a factor of 1.5 and the average annual gross agricultural output -- by a factor of 2.9.

The party's new structural and investment policy calls for the negative trends of the past decade to be overcome -- reductions in the rates and absolute increases in capital investments. Their growth during the 12th Five-Year Plan will amount to 23.6 percent compared to 10.6 percent during the 11th Five-Year Plan. Scientific-technical progress, modernization, quality and efficiency will constitute the foundation for economic growth. Constructive creative work by the Soviet people and steady improvement in the efficiency of social production can serve as a reliable prerequisite for growth in national well-being.

The party's modern socio-economic policy assumes the effective development of each region and each union republic, within the framework of the country's national economic complex. Thus, based upon further intensification of the all-union division of labor, the productive forces of the Soviet Ukraine will develop in a harmonious manner and an increase will take place in the republic's contribution towards solving the strategic tasks concerned with the economic and social development of the USSR.

In developing the new five-year plan for the republic, as called for in the decisions handed down during the 27th CPSU Congress and the 27th Congress of the Communist Party of the Ukraine, additional reserves for accelerating the rates of national economic development were found as a result of more efficient use of the production potential created, an acceleration in scientific-technical progress, a strengthening of the regime for resource conservation and the creative initiative displayed by collectives of workers. Compared to the initial planning, this made it possible to increase the planned growth in the republic's overall social product by 7.9 billion rubles and national income -- by 6 billion rubles. During the 1986-1990 period, the volume of industrial production in the republic will be increased by 21.1 percent and the average annual gross agricultural output -- by 14 percent. The plans call for the productivity of social labor to be increased by 20.2 percent and this will make it possible to realize a savings in labor equivalent to 3.6 million workers.

A radical reorganization of the work of the planning organs is needed in order to implement the more important statutes of the 12th Five-Year Plan. The task of achieving a proper balance in the national economic complex assumes special importance during the period devoted to accelerating the rates for economic and social development. In the not too distant past, it was resolved as a rule from the purely quantitative aspect of maintaining the required proportions between elements of the macro-economic structures, the branches of material production and the non-production sphere. A need obviously exists today for solving the problems concerned with eliminating the lag in the development of certain branches of the production and non-production infrastructure from the dynamics of the national economic requirements, overcoming the lack of connection between the capabilities of a number of raw

material and processing branches and improving the distribution structure for the distribution of labor potential based upon a strong and balanced coordination of working positions with the work force. But reduction of the problem of balance to coordinating only some of the quantitative parameters for economic and social development simplifies it to an excessive degree. At the present time, the qualitative criteria for economic functioning are becoming decisive in nature. It is known, for example, that satisfaction of the increasing national economic requirements for metal can be achieved not so much by increasing the production of metal products, but rather by improving the quality of these products. This applies to problems concerned with balancing the effective demand of the population with the availability of consumer goods and services. Indeed, it is precisely the low quality of the latter that has raised a serious problem with regard to shortages in many goods produced by light industry and of a cultural-domestic and economic nature, despite the surplus production of these goods, and this has complicated the functioning of the system of commodity-money circulation. Thus the problem of balance during the 12th Five-Year Plan is acquiring new meaning from the standpoint of quality.

A concentration of forces and resources in behalf of the more important strategic trends for improving productive forces constitutes the methodological basis for accelerating economic and social development. The problem of renovating the production apparatus has become especially acute. The present five-year plan must become a period devoted to the large-scale and fundamental modernization and technical re-equipping of all national economic branches, particularly the basic branches. This requires appropriate reorientation of all structural and investment policy. Sanitation of the regime for the reproduction of fixed capital assumes the activation of investment activity for the purpose of accelerating sharply the reimbursement process for the removal of physically worn out and obsolete equipment and raising the technical equipping of production through the accumulation of modern and highly productive means of labor. According to computations by UkSSR Gosplan, the wearing out of fixed productive capital in the republic exceeded 43 percent prior to the beginning of the 9th Five-Year Plan and expenditures for the capital repair of worn out equipment were comparable to the investment scales for the corresponding branches of industry. This is why corrections were required in the structure for the national income used. A need has arisen during the 12th Five-Year Plan for returning to the leading development of the 1st subdivision of social product, with regard to the 2d subdivision, mainly through more rapid growth in the production of means of labor compared to the production of objects of labor and objects of consumption. A substantial increase in the requirements for means of labor, in the interest of technical re-equipping of the national economy, signifies a substantial transformation in the existing production structure, associated primarily with the priority development of branches of the investment complex. The rapid materialization of the achievements of scientific-technical progress signifies at the same time a change in the branch structure of the investment complex. The scientific-intensive branches (instrument making, robot engineering, production of computer equipment and others) are at the head of the list of priorities.

During the 12th Five-Year Plan, almost 135 billion rubles worth of capital investments will be employed for developing the republic's national economy, or 15.4 percent more than the amount used during the 11th Five-Year Plan. Moreover, the capital investments to be used for developing the machine building branches will be greater by a factor of 1.85 than those used during the preceding five-year plan and in the construction industry -- higher by a factor of 1.44.

The republic's economy will undergo accelerated development primarily by means of an improvement in the technical level of the production apparatus and an improvement in its utilization, that is, quality factors for economic growth. Thus, during the 12th Five-Year Plan the proportion of capital investments for the technical re-equipping and modernization of production will increase to 52 percent compared to 42 percent in 1985. More than 40 percent of the production capital investments will be used for renovating the pool of technological equipment.

At the same time, the implementation of the projected plan for capital investments will depend greatly upon an improvement in the efficiency of construction production and this assumes, in addition to an improvement in the organizational structure and an increase in the capabilities of the construction industry, the conversion over to a more progressive construction technology, an improvement in the quality of plans and a reduction of the construction schedules to the normative level.

The technical-economic level of erected installations is to a large degree determined by the progressive nature of the planning solutions. However, many important installations are erected using obsolete plans. The proportion of planning-estimates documentation prepared more than 5 years ago, in the plans for capital construction throughout the republic, increased during the years of the past five-year plan from 15.6 to 20.7 percent. It is not surprising to note that the indicators for labor productivity, output-capital ratio and material intensiveness, embodied in these plans, in some instances are lower than those called for in the Basic Directions. The planning and economic organs have been assigned the task of preventing the use of clearly obsolete plans, delaying work on secondary construction projects and concentrating forces and resources on the more important underway complexes.

As emphasized in the report delivered by member of the Politburo of the CPSU Central Committee and 1st secretary of the Central Committee of the Communist Party of the Ukraine, the task of achieving an overall balance and an improvement in production efficiency must promote support for the projected plans in the form of appropriate logistical resources, while taking into account the tasks for realizing economies in their use.

The solution for the problem of resource conservation lies in making maximum use of the available reserves and satisfying 75-80 percent of the increase in the requirements for fuel, raw materials and other materials through economies in their use. Overall, during the years of the five-year plan in the UkSSR, it is expected that this factor will serve to increase the national income by 3.9 billion rubles and, as a result, material-intensiveness will decline by 5.2 percent, energy-intensiveness -- by 13.8 percent and metal-intensiveness

-- by 4.2 percent. One of the principal trends for achieving economies and thrift is that of using production technologies which will ensure the complete processing of raw materials and the inclusion of secondary resources for economic use. This will make it possible to realize a savings of not less than 9 billion rubles in the use of energy and materials during the 1986-1990 period. In particular, the plans for 1990 call for an increase of up to 13.5 percent in the proportion of use of secondary resources, compared to the overall volume of resource consumption for the more important types of raw materials and other materials and, as a result, to release 3 billion rubles worth of primary raw materials and other materials for use throughout the national economy as a whole.

In approving the regime for thrift, an important role will be played by the territorial organs of USSR Gossnab, which must increase by a factor of not less than 4.2 the volume of services for preparing resources for production consumption, particularly metal products.

For the successful carrying out of the resource conservation program, great importance is being attached to the availability of a scientifically sound normative base for planning. A considerable number of the norms in use at the present time exceed the effective limits and quite often the expenditure level which exists in actual practice. During the June (1986) Plenum of the CPSU Central Committee, it was stated directly that USSR Gosplan must direct the work concerned with creating a system of progressive norms and normatives, with the services of a broad range of ministries, departments, scientists and specialists of associations and enterprises being enlisted for this purpose. The solution for this task is a necessary condition for converting over to econmic methods for managing the national economy based upon the principles of self-support and self-financing.

In the Ukrainian SSR, the 12th Five-Year Plan calls for an average reduction in the expenditure norm for rolled ferrous metals of 14 percent, rolled tube (general purpose) -- 11 percent, drawn pipe -- 15 percent, thin-walled seamless carbide pipe -- 12 percent, rolled copper -- 9 percent, rolled aluminum -- 10 percent and rolled brass -- 11 percent. For the purpose of organized support in carrying out the tasks for achieving economies, the plans call for the development and approval during 1986 of republic, branch and oblast "Ekonomiya" programs for resource conservation and for all enterprises and organizations to be provided with the tasks concerned with carrying out this program.

The problem of efficient use of labor potential continues to be an acute one for our republic. Thus the tasks for economic and social development can be solved exclusively through growth in labor productivity. During the 12th Five-Year Plan, the entire increase in the republic's national income will be achieved by means of this factor.

Under these conditions, the problem of manning newly created working positions is of special importance since, notwithstanding the considerable orientation of investment policy towards the technical re-equipping and modernization of existing working positions, individual projects, especially in the basic branches, must be completed within the established periods in order to ensure

that the national economy is supplied with progressive technical means and the necessary resources in the needed quantities and high quality. For all practical purposes, only one method is available for manning the working positions at new installations -- the release of a corresponding contingent of workers through technical re-equipping and growth in labor productivity at existing enterprises. In this regard, a great amount of responsibility is assigned not only to the ministries and departments but also to the territorial organs for planning and administration and the local soviets of workers' deputies.

Within the framework of the republic's "Trud" Program, a complex of specific measures must be carried out in a timely manner aimed at releasing manpower at existing enterprises and redistributing it at newly created installations. Work being carried out throughout the republic in connection with the certification of working positions and providing a proper balance in terms of manpower is playing an extremely important role in this regard.

Serious tasks confront the branches of the national economy in connection with reducing manual labor. The plan has established the task of reducing the number of workers engaged in manual labor by 1.5 million individuals, or more by a factor of 2.1 than the figure for the preceding five-year plan. The plans call for the placing in operation at industrial enterprises of more than 11,000 mechanized and automated lines and the complete mechanization and automation of 8,700 departments and production efforts. By the end of the five-year plan, the proportion of manual labor in industry must be reduced to 24.6 percent (it was 34.5 percent in 1985), in construction to 43.9 percent (in 1985 -- 55 percent) and in agriculture to 53 percent (in 1985 -- 62 percent).

The Ukrainian USSR has a powerful fuel-energy complex at its disposal. A typical feature of its development is a reduction in the volume of organic fuel being produced, with growth taking place simultaneously in the consumption of all types of fuel-energy resources. This attaches a special urgency to the need for carrying out a purposeful energy conserving program.

During the 12th Five-Year Plan, as a result of the implementation of organizational-technical measures and structural improvements in the national economy, the energy-intensiveness of the total social product will decline by 13.1 percent. In the consumption structure for boiler-furnace fuel, the proportion of mazut will decrease by a factor of 2.1, while natural gas will increase by 27.8 points. Structural improvements in fuel consumption persistently call for solutions for a number of urgent tasks in the fuel branches.

A key branch of the republic's fuel industry -- coal -- coped with its planned tasks for extracting coal during the last two years of the 11th Five-Year Plan and 9 months of this current year and yet, just as in the past, the branch continues to operate in a tense manner. Preparations for the cleaning front of work have fallen behind and losses in working time and equipment idle time are being tolerated. The republic's miners are confronted by the task of mining coal at a level in keeping with the volumes called for in the USSR Energy Program, improving the technical-economic indicators for work by

enterprises by accelerating the rates for technical re-equipping and modernization and raising the efficiency of capital construction.

A sharp change for the better must be realized in renovation of the mining fund and capital investments must be concentrated in those areas which guarantee a high return. One such area consists of intensifying the volumes for the mining of coking coal through the modernization and technical re-equipping of existing mines and enrichment factories and also through the construction of new ones.

The petroleum refining industry is the most effective branch in the republic's fuel complex. The positive influence of petroleum refining operations on the overall operational indicators for the fuel branch will increase during the 12th Five-Year Plan as a result of more complete utilization of production reserves, including the complete and thorough refining of petroleum. In the process, the volume of marketable products and the nomenclature for petroleum products may be increased considerably with no additional increase in the basic raw materials.

The chief task of electrical power engineering during the 12th Five-Year Plan will continue to be that of ensuring a continuous supply of power for the republic's national economy and this can be realized on the basis of a further increase in capabilities and improvements in the structure of the branch's production potential and in the technical-economic indicators for equipment operation. The electric power output will increase by 20 percent. Powerful construction bases will be created at a number of electric power stations under construction or planned for construction and the experience accumulated in the high speed flow-line construction of these facilities will be disseminated.

A chief trend in the development of ferrous metallurgy is an acceleration in the renovation of fixed industrial-production capital for the purpose of laying the foundation for radical modernization and technical re-equipping of the branch during subsequent years. Approximately 70 percent of the capital investments intended for industrial construction will be used for this purpose. The accelerated conversion over to technological processes and new generations of machines and equipment appears as the chief lever for the technical re-equipping of production.

The plans call for radical improvements in the structure of steel-smelting production through leading development of oxygen conversion and electro-steel smelting processes, with a simultaneous reduction in the more labor and energy-intensive open hearth process. The plans call for modernization of the open hearth shop of the "Zaporozhstal" Combine, with the installation of converters and machines for the continuous casting of billets, the completion of reconstruction and modernization work, an increase in the level of use of existing converters of the "Krivorozhstal" and Zhdanovskiy Imeni Ilich combines and the Yenakiyevskiy Plant and the construction of 11 machines for the continuous casting of billets. This will make it possible to increase the production of rolled metal by 10-12 percent using the same amount of steel.

An increase will take place in the level of technical equipping of rolled metal production and the volumes for the fourth stage in the production of piping and metal products will be increased. The plans call for the placing in operation of the capabilities of the second phase of a plate mill 300 at the Zhdanov Combine Imeni Ilich and this will increase the potential for producing high strength plate steel. Work is nearing completion at the Imeni Petrovskiy Plant on a mill 550 for the rolling of periodic profiles with complicated cross sections for machine building. The plans call for the reconstruction, modernization and technical re-equipping of 16 rolling mills. Four obsolete blast furnaces, 11 rolling mills and other items of equipment will be removed from operations.

Based upon improvements in technical equipping and the introduction of progressive technological processes, the structure and quality characteristics for metal products to be produced will be improved noticeably. In particular, the production of rolled metal and piping from low alloy steel will be increased by a factor of 1.3, with thermal hardening -- by 1.7 and metal products with coatings -- by a factor of 1.2. The plan calls for the development of not less than 100 new rolled metal profiles and more than 60 types of piping and metal products.

In conformity with the tasks set forth in the republic's "Metall" Program, a savings of not less than 2.1 million tons of metal must be realized among consumers, a figure which surpasses the savings achieved during the past five-year plan by a factor of 1.5.

One very important task confronting the republic's metallurgists is that of improving the use of raw material and fuel-energy resources. Merely by improving the quality of preparation of raw materials and fuel, the technological parameters for blast furnace and steel smelting production operations, the non-residual cutting of billets and deliveries of metal products according to theoretical mass, the following savings were realized on the whole throughout Minchermet [Ministry of Ferrous Metallurgy] for the UkSSR in 1990 compared to 1985: 1.4 million tons of coke, 1.8 million tons of cast iron, approximately 1 million tons of metal for rolled metal and 3.5 million tons of conventional fuel. This will make it possible to lower material expenditures in the branch by 400-500 million rubles and increase the production of rolled metal by 10 percent, with no change in the expenditure of raw material components of iron ore, coke or cast iron.

The plans call for large-scale measures aimed at improving the extraction and enrichment of manganese ore, for which purpose the modernization of the Grushevoye Enrichment Factory No. 1 and the Chkalov Enrichment Factory at the Marganets and Ordzhonikidze combines and an improvement in the use of the capabilities of these factories, through rhythmic and complete support in the form of crude ore from mines of the Tavrichevskiy Mining-Enrichment Combine, are planned.

The materialization of scientific-technical progress in the national economy and the carrying out of radical modernization in all of its spheres and branches will depend to a decisive degree upon development of the machine building complex. The production volume for machine building products

required for the 12th Five-Year plan exceeds by a factor of 1.7 the increase planned for industry as a whole. Practically all of it will be obtained by means of technical re-equipping and improved labor productivity.

Capital investments in the machine building complex will increase by a factor of 1.9 and this will make it possible to replace more than one half of its fixed capital. Its principal portion (more than 50 percent) is for the technical re-equipping of existing enterprises, primarily for the development of machine tool production, instrument making and the electrical engineering industry. Improvements are being achieved in the production structure and in the production of progressive equipment. In particular, the production of computer equipment will increase by a factor of 2.2, processing centers -- by 3.3, flexible production modules -- by 2.2 and machines with ChPU [digital program control] -- by a factor of 2.3. A considerable increase will take place in the production of micro-processor regulating equipment for systems for controlling technological processes, program control units, industrial robots, automatic rotor and rotor-conveyer lines and automatic design systems. By the end of the five-year plan, the proportion of the production of new machines, equipment and instruments will reach 12.3 percent, compared to 2.4 percent in 1985. On the whole, the active portion of the fixed capital will be replaced by 61 percent. In the interest of accelerating the introduction of basically new technological solutions, the plans call for measures aimed at shortening the periods for the development and mastering of new equipment by a factor of 3-4.

A key problem with regard to intensification and raising production efficiency is that of achieving a substantial improvement in the quality parameters for equipment being produced. In August 1986, a conference was held in the CPSU Central Committee for the purpose of discussing questions concerned with radically raising the technical level, quality and competitiveness of the machines and equipment being produced. In this regard, the republic's machine builders are confronted by tasks which differ basically from those which had to be solved during previous five-year plans. The production of high quality products must be increased in a manner such that during the 1991-1993 period it will be possible to convert over completely to the production of machines, instruments and units which will be at the same level as the best international achievements. By the end of the five-year plan, a solution must be found for the country's most important economic and political task -- raising the proportion of machine building products which are in keeping with the international level to 80-95 percent. Based upon this achievement, a complex of technical, economic and organizational measures is being carried out aimed at ensuring that newly developed types of equipment, in terms of productivity and reliability, surpass the products being produced by not less than a factor of 1.5-2 and are competitive on the world market. The proportion of high quality products in the overall production of products by enterprises of the 11 machine building ministries located on the territory of the UkSSR will increase from 41.7 percent in 1985 to 57.8 percent in 1990.

The proportionate metal-intensiveness and energy-intensiveness of machines and equipment will be lowered by 12-18 and 7-12 percent respectively. The consumption of rolled ferrous metal will be reduced by 26-28 percent per

1 million rubles worth of marketable machine building products and its coefficient of use will be raised.

A large reserve for production intensification is that of achieving more complete utilization of installed equipment, machines and mechanisms, mainly through raising the coefficient of shift operations. During the June (1986) Plenum of the CPSU Central Committee, it was noted that the value of unused equipment throughout the country amounts to tens of billions of rubles. A situation has developed wherein old equipment is in operation at existing enterprises whereas nobody is available to man the new machines. This shortcoming must be eliminated in Ukrainian industry. In particular, according to data obtained from an inspection carried out by the UkSSR TsSU [Central Statistical Administration] on 16 May 1985, 13 percent of the equipment at machine building enterprises lies idle on a daily basis. By 1990, the plans call for the coefficient for shift operation of equipment to be raised to 1.6-1.8 compared to 1.41 in 1985, including equipment with program control and automatic lines -- to 1.9 and flexible production lines -- to 2-2.5. Thus a solution must be found for the task of converting enterprises over to double shift operations at the very least. At industrial enterprises in Kharkov Oblast, which commencing in June 1986 converted over to efficient double shift operations, it is being solved on the basis of accelerated technical re-equipping, elimination of obsolete equipment, retraining of personnel, improvements in the organization of services for workers and other measures. The experience accumulated by the Kharkov workers is deserving of broad dissemination. More active work must be carried out in connection with the certification and streamlining of working positions, improvements must be achieved in the brigade forms for organizing wages and multiple-machine operations must be developed based upon production automation and the introduction of progressive technologies.

In the five-year plan, a system of measures was defined for further developing the republic's APK [agro-industrial complex], strengthening and improving the logistical base for all of its branches and raising the economic efficiency of production. In the main element of the republic's APK -- agricultural production -- the plan for 1986-1990 calls for grain production to be increased on the average by 29 percent, sugar beets and sunflowers -- by 21, meat (in dressed weight) -- by 18 and milk -- by 9 percent. The planned rates of growth for the production of agricultural products must be achieved through the extensive use of scientifically sound farming and animal husbandry systems and the introduction of the collective contract and cost accounting. The plans call for measures aimed at increasing the capacities of storehouses for agricultural products and for reducing product losses during procurements, transporting and storage.

In the food industry of the APK, the production of granulated sugar from beets will increase by 28 percent, vegetable oil from state raw materials -- by 33, fruit and vegetable canned goods -- by 37 and meat products from state resources -- by 16 percent. At the same time, a substantial reduction will take place in the production of wine-making products, nutritional alcohol and liqueur-vodka products. More than 300 enterprises, departments and sectors engaged in the production of alcohol products will be converted over to the production of non-alcoholic beverages, juices, confectionery products, canned

goods and other products. Special attention is being given to expanding the assortment, improving the quality of the products, raising the volumes of factory wrapping and packaging and increasing container shipments.

During the 12th Five-Year Plan, the plans call for approximately 30 percent of the overall volume of capital investments to be employed for developing all branches of the republic's APK. Work carried out in connection with improving administration, planning and the economic mechanism for management within the APK system, further strengthening its logistical base and making extensive use of the achievements of scientific-technical progress and leading experience is creating genuine prerequisites for highly efficient functioning of the APK and for carrying out the tasks established for the 12th Five-Year Plan.

An important factor for accelerating socio-economic development is that of stimulating the work of local organs of administration in carrying out all-round territorial plans and special purpose programs. The successful carrying out of the tasks of the 12th Five-Year Plan is dependent to a considerable degree upon the quality of these plans and programs, the validity of measures aimed at achieving a balance between the working positions and the work force, the efficient and thrifty use of material and natural resources and others.

The decree adopted in June 1986 by the CPSU Central Committee, the Presidium of the USSR Supreme Soviet and the USSR Council of Ministers entitled "Measures for Further Raising the Role and Responsibility of the Soviets of People's Deputies for Accelerating Socio-Economic Development in Light of the Decisions Handed Down During the 27th CPSU Congress" is advancing a whole series of new tasks for reorganizing not only the functions of local organs but also their interaction with enterprises and organizations located on a given territory, regardless of their departmental subordination.

Accelerated economic development creates the material prerequisites required for solving social tasks more successfully and for improving national well-being. During the 12th Five-Year Plan alone, the plans call for more than 380 billion rubles to be used for consumption and housing and socio-cultural construction, more than the amount for the previous five-year plan by a factor of 1.2.

A further increase in the population's income is planned on the basis of these resources. The earnings of manual and office workers will increase by 13.2 percent, the monetary income of kolkhoz members -- by 20.2 percent and payments and benefits from the public consumption funds -- by 19 percent. The per capita amount of such payments and benefits will increase from 510 rubles in 1985 to 600 rubles in 1990. Real per capita income will increase by 14 percent as a result of these resources. A basic feature of the 12th Five-Year Plan is the fact that the introduction of new and raised wage rates and official salaries for workers in material production will take place mainly by means of the internal resources of enterprises. The required funds must be earned by the labor collectives.

Growth in the monetary income of the population will require an increase in the production of food and non-food products and services, an expansion in their assortment and improvements in their quality. The production of

consumer goods is to be increased by 18.4 percent during the five year period, including for economies of republic subordination -- by 24.2 percent.

The raising of national well-being to a new level from the standpoint of quality is associated not only with growth but mainly with an improvement in the structure of consumption and learning more about the reasonable requirements of the population. Progressive changes in the structure of consumption will be reflected in the leading rates of growth in the number of purchases by the population of goods of a cultural-domestic nature, light industry, a slow-down in growth and stabilization of the consumption levels for traditional consumer goods.

The food ration for the population will constantly be improved through a more rapid increase in the consumption of meat, vegetables, melon crops and fish and by a reduction in the consumption levels for grain products, potatoes and sugar. The population's requirements for services by the socio-cultural, municipal-domestic and transport services branches will be satisfied more completely. Based upon an expansion in the scales of material consumption and services for the population, the material blessings and services per capita of the population will increase by 15.5 percent during the 1986-1990 period. Compared to the 11th Five-Year Plan, appropriations allocated for solving the housing program will increase by 1.3 billion rubles. The volumes of cooperative construction will increase by 30 percent. During the 12th Five-Year Plan, 86 million square meters of new housing space will be constructed and an improvement will take place in the quality and comfort level of housing and in the level of completeness of building systems in microregions.

Solutions can be achieved for the large-scale and complicated planning tasks based upon efficient interaction by all of the production collectives and strict observance of state discipline. Here a great deal depends upon the reorganization of all elements of the economic mechanism and the conversion over to economic methods for controlling the national economy being carried out in a consistent manner. All organizational work by the planning and administrative organs must be directed towards ensuring the unconditional carrying out of the tasks for the five-year plan.

7026
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1985 PROCUREMENT PRICE INDEXES CALCULATED

Moscow EKONOMICHESKAYA GAZETA in Russian No 5, Jan 87 p 3

[Unattributed article: "Price Indexes"]

[Text] USSR Goskomtsen [State Committee on Prices] and USSR TsSU [Central Statistical Administration] have calculated the price indexes for 1985 as compared to 1984 for industrial products supplied to agriculture, the indexes dealing with rates for services rendered to agricultural enterprises and organizations on the one hand and those dealing with procurement prices for agricultural products on the other. This has been done with the goals of strengthening controls over studying prices and of maintaining price equivalency as regards the aforementioned products.

The total quantity of payments to kolkhozes, sovkhozes and other state enterprises for products sold to the state increased by 3.5 billion rubles, including by 2.8 billion rubles as a result of increasing the volume of state procurement and by 0.7 billion rubles as a result of increasing the size of payments.

The average procurement price index for 1985 as compared to 1984 comprised 100.6 percent, including 100.2 percent for farm products and 100.8 percent for livestock products.

The largest procurement price indexes were achieved for durum wheats (175 percent), grapes (110), potatoes (103), and flax fiber and vegetables (102 percent). This can be explained by the growth in procurement prices for durum wheats, by the delivery of a higher-quality product and by payment for the products at higher procurement prices as well as by structural changes in the procured products.

A decrease in procurement price indexes for sugar beets (98 percent), raw cotton (99 percent) and sunflowers (99.2 percent) occurred as a result of the delivery of poorer-quality products and of corresponding reimbursement for them.

The average procurement price index for cattle equalled 100.9 percent in 1985, for hogs--100.3 percent, for sheep and goats--104 percent, for poultry--103 percent and for milk and dairy products--100.7 percent.

The average procurement price index for industrial products supplied to agriculture and for rates for services provided to agricultural enterprises and organizations comprised 100.1 percent, including for industrial means of production--101 percent and services--97 percent.

Total change in expenditures by agriculture to acquire industrial products by means of changing average wholesale prices equalled 473.2 million rubles in 1985. Sum total cost increases in 1985 (365.1 million rubles) are due to mixed feeds and can be explained solely by the fact that there were changes in the structure of the raw materials used in mixed feeds while there was no change in wholesale prices for raw materials.

In the area of chemical means for plant protection the average price index has been increasing from year to year (in terms of a 100-percent content of active substance). Consequently, kolkhoz and sovkhoz expenditures are growing. This has resulted from the growth of supplies of expensive imported preparations, i.e. from structural changes.

As for other groups of industrial means of production, insignificant changes in wholesale prices in 1985 are also related to changes in the structure of supplies.

As regards services rendered to agricultural enterprises and organizations, in 1985 the indicator equalled 97 percent and the savings for agriculture--442.6 million rubles, which can be explained primarily by improvements in estimates for contractual building.

In 1985 for the first time the index for agrochemical and mechanization operations as well as for capital and ongoing equipment repair was close to 100 percent, which can be explained primarily by the strengthening of controls on the part of the RAPO [Rayon Agro-Industrial Organization] over payments for completed work.

8228
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AGRO-ECONOMICS, POLICY, ORGANIZATION

FLAWS IN NEW RESOURCE PLANNING METHODS NOTED

Moscow EKONOMICHESKAYA GAZETA in Russian No 5, Jan 87 p 18

[Article by Yu. Novoselov, deputy chairman of the Siberian Division of VASKhNIL [All-Union Academy of Agricultural Sciences imeni V. I. Lenin], Novosibirsk: "Plan Objectivity"]

[Text] More than once I have had occasion to witness heated "plan battles," during which the representatives of one or another oblast demonstrated with what they felt was sufficient proof that the five-year quotas related to the sale of agricultural products to the state were seriously elevated. In support of their point of view they submitted data from their neighbors and sought out "useful" comparisons of various indexes which were to their advantage.

The workers of planning organs, armed with all types of statistical information, were convinced that they were right. All of the excitement centered around those elevated estimates. It would hardly be possible to find even a single representative of oblplan [Oblast planning commission] or oblagroprom [Oblast Agro-Industrial Committee] who would complain about the fact that quotas for the sale of agricultural products to the state are depressed.

Under the conditions of a new system of norms and resource planning all of these disputes do not belong to yesterday. Whereas previously the oblast directors of various ranks battled for what in their opinion was a realistic procurement plan, now they must defend a realistic (with a consideration of their concept of this, of course) quota for the delivery of products into the general union and republic funds. Thus the problem of objective planning is still current under the new conditions as well.

We know that the procurement plan for the basic types of products is assigned to sovkhozes, kolkhozes and rayons. What kind of approach is needed here in order not to overload some with quotas while creating easy conditions for others? A great many factors must be taken into account, and first and foremost that of differences in climate.

Natural-economic regionalization does not fully deal with this problem. For example, the Eastern Siberian Economic Region includes Krasnoyarsk Kray and

Irkutsk and Chita oblasts, which are characterized by very different natural conditions. Even on the scale of a single kray, oblast or zone within an oblast climate conditions should not be overlooked.

Further, oblasts, krays, rayons and enterprises differ in the quality of agricultural lands and their structure, in soil fertility and in the physical and chemical characteristics of the soil. One oblast will have more chernozems whereas another will have solonets soils and a large area of acidic soils. There are also differences in the humus content and in the availability of nutrients in the soil. An important objective factor is the supply of fixed production capital, energy, machinery, tractors, combines, mixed feeds, mineral fertilizers and capital investments. We also cannot ignore the existing production structure, the development of a production infrastructure, the remoteness of markets, or the capacity of processing enterprises, village building and hydraulic engineering organizations.

Finally, other important factors include the availability of manpower, the training of workers and the conditions facilitating the effective use of labor, including the availability of housing, its quality, the availability of kindergartens, cafeterias and hospitals.

Even from this short list the complexity of the problem of objective planning is evident. One oblast will have sufficient manpower but infertile soil. In another oblast there may be sufficient manpower as well as better agricultural lands than the neighbor's, but there may not be sufficient rainfall during a plant's vegetative period. In other words, it is difficult to find two identical oblasts in the country to whom identical plans could be assigned. The situation is complicated by the fact that the quotas encompass not one but several different types of products. In all there are over 100 different types. It is impossible to reduce this variety to some kind of standard product. A large number of proposals have been tested--to calculate according to feed units, or to cost price, or to universal comparable prices or to land capacity.

Of course the task of comparing various types of products could be solved if we could find quantitative equivalents for product "usefulness." But right now this is still in the realm of phantasy.

What should we do? Should we come to terms with imperfect planning? Should we continue to hone the intuitive skills of workers of planning organs, who have perfected the method of planning "according to what has been achieved"? No, the existing methods do not satisfy anyone--neither the workers of central organs nor the specialists of oblasts, rayons and enterprises.

The search for new planning methods is proceeding on a wide front. The agricultural division of RSFSR Gosplan has collected a large quantity of various agricultural planning methodologies which undoubtedly represent a step forward as compared to a plan based on "that which has been achieved." But even these methodologies do not solve general problems because they take only one or two types of resources into consideration. These methodologies are intended for the utilization of the types of scientifically-based norms differentiated according to zones that we have not yet been able to work out

(incidentally, the elaboration of these methodologies runs into the same problem of numerous and different objective production conditions).

Scientists have proposed the utilization of optimization models, correlation-regression analysis as well as various methods of manual calculation. But in practical terms these methods have not found an application in APK [Agro-industrial complex] planning.

A group of scientific workers of the Siberian Division of VASKhNIL and of the Mathematics Institute of the Siberian Division of the USSR Academy of Sciences has proposed the use of machine methods to develop the laws needed to process large amounts of information by computer in order to aid in the planning of agricultural production and related areas.

The essence of these methods consists of the following. Initial data must be supplied in the form of a table which presents the great number of objects under study (of oblasts, rayons and enterprises) and the basic indicators which characterize the objective conditions and results of production for each object. Seventy one oblasts of the RSFSR were selected. Each oblast is described by 400 characteristics. In advance it is not always clear which objective conditions and factors are most significant, which affect results the most, whether a relationship exists and what kind of relationship it is. It is precisely for such situations with unclear relationships that machine methods have been developed for bringing to light the laws and relationships while processing real information about the condition of objects. The so-called method of weighted analogs has turned out to be the most successful. It differs from previously-proposed methods in that those utilized average calculations for the zone or rayon. Averaged indicators usually are far from objective and far from the actual situation in every specific rayon or enterprise. Its principle feature is that it calculates the norms for capital-output ratio, labor intensity, power capacity and other factors in a differential manner for every oblast when assigning plans for the procurement and delivery of products into centralized funds. In each case (for example, for Moscow Oblast) a group of analogs which most "resemble" the oblast in all objective production conditions are selected automatically.

The calculations are then repeated again for each subsequent oblast--Chelyabinsk, Chita and Novosibirsk. Moreover, the group of analogs does not necessary include neighbors. For example, for Maritime Kray one of the analogs may be Kaliningrad Oblast, for Magadan -- Murmansk.

At the second stage the most important factors are automatically selected from among the chosen group of analogs; it is on these factors that production results depend to a decisive degree. Moreover, a list of the most significant factors is selected for each oblast. For example, for Astrakhan Oblast the amount of precipitation throughout the vegetative period is the most important of climate indicators; for Arkhangel and Vologda oblasts--total temperatures above zero.

The first two stages are the simplest and do not require a large expenditure of machine time. But, as one would expect, there are no two analogs alike from those which have been chosen. All of them differ from each other, even

if by a small amount, just as the most important factors affect production results to different degrees.

Thus the necessity arises first of all to check the possibility for estimating individual norms and for determining procurement volume, and secondly, to select those parameters of decisive functions with which it will be possible to achieve the most reliable results. With these goals in mind, repeated examinations of estimates are carried out with the use of information from preceding years. This is done for each oblast within a group of analogs and for each of the selected factors. Dozens of different variants are taken into account.

What have we been able to accomplish with the help of the new method? With the active participation of directors of the agricultural division of RSFSR Gosplan the following work was carried out. A determination was made of the possible procurement volume for grain, potatoes, vegetables, livestock and poultry, milk and other types of products in the RSFSR as a whole for 1990 depending upon existing and allocated production resources--technology, fertilizers, mixed feeds and capital investments (a total of 40 indicators). In other words, a "realistic" plan has been developed, one which is supplied with all the essential resources. Of course, calculations have not agreed with preliminary control figures and for this reason it was necessary to introduce reasoned proposals about corrections in plan tasks.

At the second stage procurement plans of equal intensity were calculated for the 12th Five-Year Plan for every oblast, kray and autonomous SSR. The point of tasks of equal intensity involves the fact that the plans include equal supplies of resources for all oblasts, with a consideration of objective natural conditions. For individual types of products the plan may be intensive and difficult to fulfill, but it is equally "difficult" for all. Moreover, each oblast will be able to figure out why it has been assigned a particular volume. To do this it is essential to examine what oblast-analogs and factors have been selected and how they affect production results.

After this a successful attempt was made to determine the expected productivity of livestock during the remaining months of the current year, which is very important for controlling the course of plan fulfillment and pre-plan estimates for the coming period. Efficient predictions (one year ahead) were justified by a high level of precision (in 1984 prediction error throughout the RSFSR, or the deviation of actual results from predicted results, comprised 0.86, and in 1985--0.4 percent). Predictions were also made for individual oblasts.

The results of pre-plan estimates and predictions were examined by the board of RSFSR Gosplan. It approved this work and commissioned the continuation of research and the introduction of elaborations. The scientific-technical council of the republic's Gosagroprom [State Agroindustrial Committee] confirmed the planning and prediction methodology and recommended it for widespread use. In the course of operating the programming complex that has been developed it was learned that with the help of the method of weighted analogs it is possible to deal with other no less important questions--to evaluate the work results of oblasts, krays and autonomous republics, rayons

and sovkhozes and kolkhozes with a consideration of all basic objective production conditions; to fairly distribute technology, mixed feeds and capital investments; to determine the expected threshed yield of grain crops; and to evaluate the intensity of plan tasks.

As soon as the workers of planning organs became aware of this methodology dozens of orders poured into the Siberian Division of VASKhNIL from many oblasts. The first to assimilate the methodology was Chelyabinsk Oblast, which makes its estimates independently, and this is to the great credit of the oblast's oblplan and agroprom.

Procurement plans of equal intensity have been prepared for the rayons of Novosibirsk and Chita oblasts and Krasnoyarsk Kray. Requests were made by Kaluga and Murmansk oblasts, the Bashkir and Buryat ASSR's and by many other oblasts and republics in the country. The small collective of developers of this methodology are trying to satisfy the requests of all oblasts and krays. But requests are coming in in an avalanche and we obviously do not have the manpower to satisfy all requests.

What is to be done? The answer has been suggested by the already existing experience of assimilating the new methodology in practical terms. First of all, the methodology of objective planning must really, and not just in words, be accepted by all planning organs and agroproms.

Secondly, practical courses for users (representatives of oblplans, oblast agroproms and definitely operators and programmers) dealing with the new planning methodologies should be organized in the SibNII [Siberian Scientific Research Institute] of Agricultural Economics and the Mathematics Institute. In this case each worker of the oblplan should arrive with the basic data for his oblast recorded on magnetic tape and solve a real problem under the guidance of scientists. After this he will be given all the necessary programs with detailed instructions for them. Similar forms of cooperation have already been tested in Chelyabinsk Oblast. We became convinced that a trained programmer can master the programming complex within a week and that workers of oblplans master the essence of the method in virtually a few hours.

Of course it is absolutely impossible to disseminate the new planning methodology through correspondence and telephone conversations. Each individual must have the experience of solving at least one problem using the computer under the direction of scientists.

The paradox is that no one who has become acquainted with the planning methods that utilize machine methodology for discovering laws is opposed to them. However, energetic and practical measures for mass use are not being taken. Is it possible that any types of methods will seek practical application even if these methods only partially enable us to increase planning objectivity while the ready and tested methodologies will lie idle without being used?

We would like to hope that today, during the era of accelerated scientific-technical progress, new planning methods will quickly find their way to those for whom they have been intended.

8228
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COST ACCOUNTING IN APK RESTRUCTURING EXAMINED

Moscow PRAVDA in Russian 19 Jan 87 p 2

[Article by G. Bespakhotnyy, doctor of economic sciences and professor: "Through the Prism of Cost Accounting: The New Economic Mechanism Is Gradually Penetrating the Elements of the Agroindustrial Complex"]

[Text] A new economic situation is taking shape in the countryside. The question of shifting agroindustrial enterprises to full cost accounting is rising to its full magnitude. And as is well known, it presupposes self-support [samookupaemost] of expenditures and self-financing of capital investment. Thousands of kolkhozes and sovkhozes are no longer dependent on the state and cover expenses with incomes. Five rayon agroindustrial associations and all the Stavropol farms operate on full self-support. This same principle was also made the basis of the "Kuban" type agricultural combines which are being set up.

The problem of cost accounting in the countryside is not new. Let us recall the attempt to incorporate it universally in the early 1970's. At that time the attempt was unsuccessful. Cost accounting came into conflict with the rigid price-setting system, the directive nature of assignments, and the limited self-sufficiency of kolkhozes and sovkhozes.

It is another matter now when the restructuring of the economic mechanism is going on, as they say, along the entire front and is affecting all enterprises of the agroindustrial complex and all levels of management. An altogether new mechanism is being introduced starting this year. But many of its elements have already been incorporated. Republics and oblasts have been given assignments for delivery of output to all-Union resources and the rest of the output will be used at local discretion.

Instead of plans based on past achievements, farms are being given assignments based on resource potential. The logic, it would seem, is simple and clear. Not everything is smooth in practice. The potential of a farm is determined by a group of factors: the land, the work force, and the fixed and working capital. But if there are not enough people, then they cannot be replaced, for example, by land and equipment.

Let us suppose that uniform standards of commodity output yield for certain types of resources are adopted for the republic and the oblast as a whole. The specialization of the farms and the influence of various production factors should be taken into account. For example, the output-capital ratio at Tula Oblast kolkhozes and sovkhozes with different specializations fluctuates from 10 to 46 kopecks.

The structure of plantings and equipment availability are frequently the same for farms with fundamental differences in the level of available work force per hectare of land. Because of this there are widely varying results. The new system of planning is also good in that it allows them to bring these deeply hidden reserves into action. But even here formalism is still frequent. Some managers still like to adopt a little lower assignment. Unfortunately, the mechanism for formulating realistic and at the same time intensive plans has not been found yet.

The transition to self-support makes the question of profitable and unprofitable output more critical. Some people try to get rid of unprofitable sectors. But then who will there be to grow potatoes, for example, which bring less revenue than flax? And how should the "agroproms" behave here? Resign themselves to managers who refuse to have anything to do with the unprofitable crop? It might be a good idea here to use a lever such as supply. Gosagroprom [State Agroindustrial Committee], by the way, took the first step in this direction. Farms are given scarce equipment and building materials for above-plan sale of grain.

How the new economic mechanism will operate will depend to no small extent on the management apparat. The process of restructuring it and linking up subdivisions does not always go smoothly. Reorganization has reduced staffs. But some "agroproms" have taken a simple approach: former management functions have been redistributed among the remaining subdivisions and new ones involving intersectorial questions have been added. Specialists complain of the busywork and abundance of paper. That is what sometimes results from mechanical attempts to fit former management functions to a new structure. An old dressing gown with new patches, as the saying goes.

However, the structure of the organs should flow from the essence of the tasks being performed. It must be noted that a great deal is being done in the "agroproms" to improve coordination of sectors and the planning of the AKP as an integrated whole. In order to go deeper, forces, including management forces, must be concentrated in the decisive directions of scientific-technical progress. Flexible management structures and temporary collectives from the apparat are needed to supervise the formulation and realization of target programs. Incentives for these collectives and for individual executives should be tied to the effect obtained.

Production systems are also among the flexible organizational forms. They are to be used to accelerate the introduction of progressive technologies. Each oblast has enterprises headed by talented organizers. Using their knowledge and experience more fully to insure that the sphere of energetic activity of the progressive managers is not limited merely to their kolkhoz or sovkhoz but made as widespread as possible is one of the tasks of the production systems.

Relations between the head farm and the other farms should be built on an economic basis and on mutual advantage.

Self-support is inconceivable without shifting the entire "agroprom" management system to economic methods. The functions, style, and methods of economic management are changing at all levels of the agroindustrial complex. Departmental "barriers" between sectors have been removed. Nonetheless, higher "fences" remain, and behind them are USSR Gosplan, Goskomtsen [State Committee for Prices], Goskomtrud [State Committee for Labor and Social Questions], the Ministry of Finance, and Gosbank. Hardly any redistribution of functions in connection with the creation of Gosagroprom has occurred. This gives rise to duplication and endless agreements.

The system of economic management increases the role of the oblast link. Its rights have been appreciably expanded, particularly in planning, supplying the population with foodstuffs, and setting contract prices. The oblast "agroprom" is becoming the organ of cost accounting management. This means insuring that the oblast "agroprom" bears economic responsibility for its actions. And, what is more, insuring that interrelations with higher ranking levels are also built on an economic basis.

Scientists and practitioners speak of the fact that it is expedient to reduce the number of indicators delivered to oblasts and to reduce the proportion of mandatory deliveries but increase contract deliveries. More opportunities for economic maneuvering will appear.

The oblast "agroprom" will need additional levers to regulate state purchase and retail prices. Extreme centralization in setting them makes it impossible to take local conditions into account. In order to regulate prices the oblast "agroprom" must have the appropriate funds at hand. They can be created, by the way, using various existing supplementary payments (for increase in output and overfulfillment of the plan as well as supplementary payments for low profitability farms).

One of the pressing problems is evening out conditions of economic activity. Some specialists believe that it is most feasible to do this using a resource tax. This would replace the income tax at kolkhozes and deductions from profits at sovkhozes. By accumulating differential rent and part of the other sources of additional income in centralized funds, the oblast "agroprom" is able to actively even out conditions of economic activity.

In conditions of self-support the functions of the rayon agroindustrial associations are also clearly seen. When administrative methods of management were in operation, the RAPO looked like an intermediary link. Now an intermediary office is not needed. The RAPO can work on intersectorial coordination in earnest. APK enterprises are making direct contract ties among themselves. The search for rational interrelations between the rayon "agroprom" and enterprises continues. Interesting experience has been accumulated.

In most cases the farms and the RAPO, as observations show, merely coexist. Workers in associations at times drown in paper and waste time at numerous

meetings. The rayon agroindustry obviously must be an even more democratic organ and operate on the principle of collective self-management. Let apparat specialists act as representatives of interfarm services in relationship to farms rather than taking the role of bosses. The solution of engineering, agronomic, zootechnic, economic, and other questions may be entrusted to the RAPO councils, which will include the main specialists of all enterprises. Then managers will not blame the association and expect solutions from it, because they themselves are the RAPO. Of course, this is one of the possible variants for improving the rayon "agroprom," which is now served by scientists and specialists from farms and the "agroprom."

Agricultural services offices, processing plants, and combines are asking to be ranked as interfarm enterprises. If this were done it would be easier to subordinate them to the interests of the kolkhozes and sovkhozes and introduce a cost-cutting mechanism in practice.

Full cost accounting will promote acceleration when external and internal ties of the enterprise are based on economic responsibility. Economic methods of management open the way for genuine cost accounting. An important task -- returning the lost sense of being the master of production to farmers and livestock breeders -- cannot now be performed without it and without the collective contract. At times you hear brigade leaders and crew foremen report to meetings of the bureau of economic analysis and it seems that if the chairman and director did not organize such meetings no one would analyze or reckon costs. Cost accounting and economic methods have still not become the law of life in the "agroprom."

And so, restructuring is gathering speed and the new economic mechanism is gradually penetrating all elements of the APK. The first year of work in conditions of a unified "agroprom" is in many respects instructive. Its results are the basis which enables us to move ahead and improve the economy of the agroindustrial complex.

12424
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STAVROPOL KRAY PARTY OFFICIAL EVALUATES APK RESTRUCTURING

Moscow SELSKAYA ZHIZN in Russian 24 Jan 87 p 2

[Interview with N. Yeremin, secretary of the Stavropol Kray CPSU committee, by S. Timofeyev, Stavropol Kray: "Not Limiting Ourselves With Half-Measures"; first paragraph is source introduction]

[Text] An active process of restructuring, renewal and reexamination of antiquated methods is taking place within the operations of the Stavropol Kray party organization. Still, in some workers, the attachment to the old has deadened the feeling of responsibility, the taste for initiative and to some degree the belief in their potential. What are the party kraykom [kray committee] and other party committees doing to eliminate such phenomena? This the subject under discussion between newspaper correspondent S. Timofeyev and the secretary of the Stavropol Kray party committee, N. Yeremin.

[Question] Are you satisfied with the course of restructuring within the kray party organization?

[Answer] The lack of correspondence between work style and the spirit of the times is characteristic of only a portion of the party committees. But even this should not reassure us.

Restructuring should be carried out everywhere and should not be confined by half-measures. I must stipulate immediately that acting in the new way does not at all mean that we must sweep away the good that has been accumulated through previous experience. Let us look, for example, at the Georgiyevskiy Rayon party organization. First secretary Yu. A. Bocharnikov took charge of it about 10 years ago, having been elected to this responsible post from the position of kolkhoz chairman. Whereas in the enterprise he was considered an "academician," in the rayon from the very first he was not embarassed to become a "student."

This is understandable. It is one thing to be a manager and quite another to be a party worker. One must gather experience, understand and master different methods. And Yuriy Alekseyevich mastered them quickly. Of course his skills as a manager served him in good stead when figuring out the reasons for errors in party management of the economy. He was able to change the work of the aktiv from the humdrum and the false starts that resulted from the

large number of instructions and recommendations into a systematic branch which has established its target programs. The main thing to which the raykom turned its attention is work with people directly in labor collectives. After all, no matter how good the program, its fulfillment depends wholly on the immediate executors. It is this that helps us to judge the circumstances rapidly and to seek out the correct solution.

[Question] Yuriy Alekseyevich Bocharnikov once said to me that in the development of creative initiative and activeness among cadres a large role was played by their public certification. How widely is this practiced now?

[Answer] The implementation of public certification of managers following the experience of Georgiyevskiy Rayon has been widely confirmed in the kray party organization. The labor collective, the party group and the primary party organization--these are the links of the common chain in which the reserves for accelerating, renewing and strengthening the economy lie. It is here that the energy of projects is most brightly and concretely transformed into the energy of practical activity. If not these people of labor then who is worthy to evaluate the strong and weak points of his managers? In turn, these people will also feel more responsibility to their subordinates in terms of the promises they have made and the weightiness and effectiveness of a particular order.

There was a time when even questions that were to be discussed at party meetings were determined "from above" through directives, instructions and decisions and when intra-party life in the collective was secondary. This resulted in the "taboo" to criticize "from below." And even if criticism was heard, then the communists who used their rights could sometimes be placed in the category of scandalmonger or complainer. Due to the lack of a creative atmosphere in labor collectives and due to the free reign in work methods on the part of directors, Moskovskiy and Yegorlykskiy sovkhozes of Izobilnenskiy Rayon eked out a miserable existence for many years. It was only when new managers, the good organizers Ye. Kalyugin and A. Merzha, became the administrators of these sovkhozes that the workers of these enterprises were able to express their potential. Party organizations and directors directed field workers and livestock farmers toward mastery of the economic factors involved in management and toward the intensive management of production. Gradually those people who were morally and materially interested in improving the situation underwent a noticeable psychological change, a change in conceptualization, and began to express initiative, which was supported in every way possible. Things began to move...

[Question] Still I sometimes come across instances in which the management link is following the old, overtravelled path and awaits some kind of instructions. They talk about the wind of change, but they themselves...

[Answer] Incidentally, a word about the winds of change. As we all know, the wind is a temporary phenomenon. This is what some directors of various ranks are hoping for. We'll talk about it, they say, and then everything will calm down. Perhaps this is what the secretaries of the Budennovskiy CPSU gorkom, V. Mikhaylenko, A. Belitensko and V. Sosikova, thought when they slowly mastered the methods of political management and tolerated elements of

glorification and when they did not delve deeply into current problems of village development.

Members of the buro of the CPSU kraykom gave a lesson in party spirit by scheduling a meeting on the question of the restructuring of the style, form and methods of operation of the Budennovskiy gorkom, in which the first secretaries of many CPSU gorkoms and raykoms and deputy directors of divisions of the kray party committee participated. The discussion turned out to be objective and detailed. Measures to eliminate shortcomings were determined collectively. We thoroughly informed the party aktiv about this conversation.

Incidentally, we are paying particular attention to the questions of openness [glasnost]. It is the springboard for the psychological restructuring of our cadres. Without openness there can be no democratism and no active creativity among the masses. We regularly have single days of political information, press conferences and village meetings, and we listen to public opinion. No one can be protected from criticism. We must have a careful examination of competency and of a high level of party spirit in each manager, small or large.

[Question] Recently several workers of the CPSU kraykom apparatus were elected to be first secretaries of party raykoms. Many people who had worked as secretaries of local party organizations became managers of kolkhozes and sovkhozes. This significantly stimulated the operations of labor collectives and entire rayons. Do these types of cadres shifts represent coincidence or a fully thought-out policy?

[Answer] Of course this is a policy. There can be no natural course in the selection, distribution and education of cadres. In that same Izobilnenskiy Rayon V. P. Bondarev, a worker in the party kraykom apparatus, was elected to be first secretary several years ago. At that time the rayon was steadily declining according all indices. Write-ons were in progress and complaints poured into the kray and central organs. Having received good training in komsomol and party work and having passed the school of political and moral development, the young secretary quickly found a leveling control. He was supported by the people when they saw how much and how selflessly Vasiliy Pavlovich was working, how attentively he dealt with the needs of villagers and how much concern he showed for the everyday lives of farmers and livestock farmers. Today no one has any doubts that the acceleration and purposeful growth in the pace of production output, the improvement in production quality and growth in the profitability of enterprises were given an impetus by the bounding energy of the party leader.

Recently, A. V. Gorbachev, N. A. Tarannik, I. I. Nikishin and V. K. Chebanov were recommended from the kraykom apparatus for the posts of first secretaries of party raykoms. The recent secretaries of party organizations, V. F. Kalashnikov, N. G. Mironyuk, S. G. Salov, I. V. Sapronov and many others are dealing excellently with the responsibility of kolkhoz chairman. Their advancement is not coincidence but the result of a carefully thought-out policy and precise system of training cadres.

A commission created within the party kraykom is examining proposals from local areas regarding candidates for advancement. Each year a group of 15-20 persons is created. Initially they study in the department for increasing qualifications of the agricultural institute and then they receive practical experience in 27 base enterprises. Here they master methods of economic analysis and the organization of production and wages and delve into the fine points of working with people. In turn, the directors of the base enterprises study the trainees. Only after this is a determination made regarding the advancement of the candidate for responsible work. During the last five-year plan 120 individuals went through this type of school. Of these, 81 "reservists" are now working as kolkhoz chairmen and sovkhoz directors.

[Question] But what are we to think about the serious cases of violations of Soviet law and elementary etiquette, and of the misuse of work position on the part of former kolkhoz chairmen Koplikov, Kovalev, Marchenko and Zhuravlev in Petrovskiy Rayon? This rayon is thought to be a kray leader. And in truth, a high pace of increasing production output and of strengthening the economy has been achieved here. Didn't this disturb the workers of the CPSU raykom? Didn't they lose their sense of responsibility for the highest moral qualities of administrators, to whom in the final analysis the fate of people is entrusted?

[Answer] The manager is given the right to make demands of others. This is why he must be totally pure and just; this has always been emphasized by the party. All the guilty parties in Petrovskiy Rayon,including raykom members, received what they deserved. This is a lesson, a lesson for all. One cannot evaluate the manager solely according to the results of activity in the sphere of economics. Communists, measuring their plans against the course of restructuring, suggest to us that we emphasize individual educational work with people. We fervently accepted this proposal. Now there has been a significant curtailment in all types of "mass measures." We hold meetings and conferences on Saturdays or after 4 p.m. The remainder of our time is dedicated to work with people. We have begun restructuring from that which previously there was not enough time for and we are proceeding insistently, without fanfare or emergency measures.

It is true that people have already appeared who proclaim publicly that they have completed restructuring. But if we look closely we find that they have taken only a small step forward and have begun to admire themselves. The kray agroprom has hardly decreased the number of meetings, seminars and summonses and already feels that it has announced a merciless struggle against conference boredom. The vocabularies of some chairmen and directors has been enriched today by means of modern words such as EVM [Electronic computer], ASU [Automatic control system] and computer. They try to show that they are in step with the scientific-technical revolution. But in reality livestock farmers sometimes still perform manual labor.

We always remind them that restructuring is not a one-time act but a process that will take place within the framework of a historical period. We must decisively crush attempts to overly organize restructuring and to narrow this very concept. And of course we should place an insurmountable barrier on the well-travelled road of inertia in thought and of antiquated habits.

[Question] For a year now Stavropol Kray has been operating under the conditions of an economic experiment. Can it be said that the fulfillment ahead of schedule of annual plans and obligations regarding the sale of grain, meat, milk, wool and other products to the state is the result of work according to complete cost accounting and self-support? And how is the experiment to accelerate proceeding?

[Answer] This is two sides of the same coin. The experiment helped to make more concrete the work of people and collectives, established new economic criteria and subjected the material base to restructuring. And things began to go much better.

And still I must say that there are many problems and unsolved questions in the kray. The kray committee and rayon and local party organizations are well aware of them and are making every effort to correct shortcomings and to achieve continued movement forward as quickly as possible.

8228
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AGROPROM OFFICIAL VIEWS 1986 DAIRY CATTLE RAISING

Moscow SELSKAYA ZHIZN in Russian 17 Jan 87 p 3

[Interview with L. N. Kuznetsov, deputy chairman of USSR Gosagroprom, by N. Nikulina, special correspondent of SELSKAYA ZHIZN: "The Country's Dairy Shop. How Did It Work Last Year?"; date and place not specified; first paragraph is SELSKAYA ZHIZN introduction]

[Text] A total of 100 million tons of milk--this is the goal attained by the country's livestock breeders in 1986. Such output was obtained for the first time. In a talk with N. Nikulina, the newspaper's special correspondent, L. N. Kuznetsov, deputy chairman of USSR Gosagroprom, discusses how livestock breeders have pursued this and the affairs and concerns of workers at kolkhoz and sovkhoz livestock sections.

[Question] Dairy cattle raising is sometimes called the "litmus paper of animal husbandry." The state of affairs in the entire sector--animal husbandry--best describes the state of dairy sections. Lev Nikolayevich, please tell us what does this indicator show now.

[Answer] Dairy section workers have completed the first year of the 12th Five-Year Plan successfully. More than 100 million tons of milk have been produced. Never before did we obtain such output. Last year alone, as compared with 1985, milk production and purchases increased by 3.7 million tons. This is primarily the result of the favorable changes that have taken place in the country after the April (1985) Plenum of the CPSU Central Committee. People's creative activity has increased and labor and technological discipline has become stricter. These factors play a big role in animal husbandry, perhaps as in no other agricultural sector. The course of intensive animal husbandry methods also proves its value fully. In the last 4 years the dairy herd population has decreased by almost 600,000 cows. But their productivity has increased by more than 400 kg, totaling 2,604 kg.

Unfortunately, intensive factors do not yet determine the development of dairy husbandry everywhere. At many livestock sections cow productivity is below 2,000 kg of milk. Milk yields are growing extremely slowly in a number of oblasts in the RSFSR, the Ukraine, Kazakhstan, and Central Asian and Transcaucasian republics. Feed shortage is the main reason.

[Question] The feed base has always been the foundation for animal husbandry. Its development determines the rates of the sector's intensification. What changes have taken place here?

[Answer] At first a few figures. In the last 4 years feed consumption in dairy husbandry has increased by 11 million tons of feed units, or by 11 percent. Whereas previously there were 36.3 quintals of feed units per cow, now there are 40.3 quintals. The ration structure has also changed. The consumption of coarse and succulent feed has increased by 18 percent and of concentrates per cow has decreased from 9.9 to 9.3 quintals of feed units. More hay, including legume hay, and root crops have begun to be put in feeders. The quality of fodder has improved. Now three-fourths of the hay and silage and almost two-thirds of the haylage and grass meal are of first and second categories.

Thus, there is some progress. Nevertheless, the provision of livestock with feed, especially the balance of rations in terms of protein and carbohydrates, continues to remain the sector's biggest bottleneck.

It will not be an exaggeration to say that the establishment of a firm guaranteed feed base is the main condition for stable animal productivity growth. Literally every farm is able to fully provide dairy husbandry with its own coarse, succulent, and pasture feed. The way to this is known--intensification of field and meadow pasture feed production. By the end of the five-year plan it is necessary to increase the production of all types of fodder per cow to no less than 45 quintals of feed units, the average content of digestible protein per feed unit totaling 110 grams. Without plenty of feed it will not be possible to uncover even the developed genetic potential.

[Question] You said "genetic potential..." In connection with this I recall the recent decree by the CPSU Central Committee and the USSR Council of Ministers on measures to improve the organization of pedigree stockbreeding in animal husbandry. How will this affect an improvement in the quality of the milch herd?

[Answer] The measures envisaged by the decree are of exceptional importance for rapid scientific and technical progress and the further intensification of animal husbandry. First of all, plans are made to improve our animal breeds through the utilization of the genetic potential of the best domestic and foreign breeds. The following goal was set in dairy cattle raising: To develop herds with annual milk yields of 5,000 to 7,000 kg. A special role is assigned to the utilization of the Holstein breed. Its crossbreeds yield 350 to 500 kg of milk more as compared with their contemporaries.

Biotechnological methods--in particular, the transplantation of embryos from record holding cows for obtaining outstanding sires--become an important link in pedgiree stock work. A total of 28 transplantation centers and 28 transplantation stations have been formed in the country. A qualitative improvement in the milch herd is a long-term and not a simple matter. There is already a basis for such work. Advanced farms have attained quite good results in this direction, for example, in the Baltic republics and in Moscow, Leningrad, and some other oblasts.

Of course, good feed and selection work will help the country's livestock breeders to increase the yield of dairy sections. However, this problem should be solved overally. Production technology--techniques increasing productivity and facilitating the working conditions of livestock breeders--occupies a significant place here.

[Question] What, for example, is the flow-shop milk production system? What does it give to the sector and what hampers its popularization?

[Answer] Many people have now become convinced that the shop system is the basic path of improving milk production technology. More than one-half of the milch herd has been transferred to the advanced system in the Ukraine, Belorussia, Moldavia, and Kirghizia and up to 80 percent, in Leningrad, Chelyabinsk, Vinnitsa, Volyn, Voroshilovgrad, Lvov, Odessa, Ternopol, Chernovtsy, and Grodno oblasts. Throughout the country by the end of this five-year plan all livestock sections with 400 cows and more will be transferred to the flow-shop system.

The experience of the farms that have introduced it shows that milk yields of cows increase by 200 to 300 kg and the yield of calves per 100 cows increases by three to five head. On farms in Ivano-Frankovsk Oblast the flow-shop system has been introduced at 182 dairy sections and complexes. Indicators in animal husbandry have improved significantly. During the years of the 10th Five-Year Plan the average yield per cow totaled 2,652 kg, whereas in 1986, 3,106 kg. The calf yield has also become higher.

However, this potential for increasing efficiency and labor productivity is by no means utilized fully in a number of republics and oblasts.

[Question] Lev Nikolayevich, I would like to add that labor productivity depends not only on equipment, but also on whether a milkmaid has comfortable working conditions, whether she has a place to change her clothes and have a bite to eat, and whether a mobile shop will arrive with ordered goods at the livestock section on time--in general, on everything that creates a good frame of mind and adds energy.

[Answer] Ultimately, the success of any endeavor depends on people. The human factor is considered of paramount importance for good reasons. Where social problems have been solved, the work of livestock breeders has been made easier, their work day has been normed, the livestock section has been provided with public services and amenities, a road has been built to it, and genuine concern has been shown for workers, there is no search for milkmaids throughout the rural area. What milkmaid does not dream of working, even if for a short time, on such farms as the Kolkhoz imeni Lenin in Novomoskovskiy Rayon in Tula Oblast?! Milking rooms, automatic machines, and efficient modern technology enable the mechanical milking expert to service 150 cows at once and to obtain more than 800 tons of milk annually. Labor expenditures on the production of 1 quintal of milk total only 1.2 man-hours here and its production cost is 18 rubles. In terms of labor productivity in dairy husbandry this kolkhoz has reached the level of the best world achievements. Many such examples can be cited. The Vyayke-Maarya Kolkhoz in Rakvereskiy

Rayon, the Estonian SSR, the Pamyat Ilicha Kolkhoz in Shchelkovskiy Rayon in Moscow Oblast, the Adazhi Kolkhoz in the Latvian SSR, and many other farms attain a high productivity in the sector.

At the same time, throughout the country labor at dairy sections remains unproductive. The lack of an overall mechanization of livestock sections, weak application of advanced work regimes of livestock breeders, and slow solution of social problems are the main reasons. Many complaints about plants responsible for the output of equipment are also heard.

An increase in labor productivity is closely connected with the introduction of efficient forms of labor organization and intracost accounting. A total of 62,000 brigades and links, which service 60 percent of the cow stock, now work on the basis of the collective contract in dairy husbandry. As a rule, the contract collective more willingly changes over to advanced labor facilitating regimes. In dairy husbandry the 5-day work week has been introduced on 6,300 farms, 4,900 farms have changed over to two-shift work, and a two-cycle daily work schedule has been established at livestock sections of 17,200 kolkhozes and sovkhozes. I am convinced that almost all dairy sections can operate in the same way. However, a one-shift three-cycle work regime continues to dominate in the sector. With such a schedule the milkmaid's work day begins at 0500 hours and ends late in the evening. The extension and fragmentation of the work day shortens rest and milkmaids have no time to take care of household chores, or to rest. This is reflected in their frame of mind, lowers their labor productivity, and alienates young people from livestock sections. It is not surprising that there is a constant shortage of milkmaids here, remote rural areas become deserted, and small livestock sections fall into decay.

[Question] It's a pity. Small livestock sections could help to revive villages that are dying away, give their inhabitants work, and better utilize remote natural land.

[Answer] Yes, the importance of small livestock sections should not be belittled, although we obtain two-thirds of the milk produced in the public sector from big livestock sections and complexes. However, the remaining one-third, after all, represents 25 million tons of milk! Machine technologies and advanced labor organization can also be applied in small cow sheds. This would be desirable. Estonian milkmaid Leyda Peyps, who is known throughout the country, works in a barn for 100 cows, but she obtains more than 500 tons of milk annually from them. Hero of Socialist Labor Elza Mitrike works at a tiny livestock section removed from the central farmstead of the Adazhi Kolkhoz in the Latvian SSR. Milk yields of cows in her small group almost reach 7,000 kg.

And what about the family contract? It is most convenient to apply it precisely at small livestock sections. It should be stated that such labor organization has become ever more widespread recently. There is a double advantage: The entire family is engaged in work and, for example, the sovkhoz director does not have to think about whom to send to a remote village to milk cows and who will transport feed to it. Family livestock sections have now appeared in the Baltic republics, Belorussia, and Moscow, Vologda, Kirov,

Yaroslavl, Ryazan, and other oblasts in the Russian Federation. For example, two families work at the Zolino livestock section in Klinskiy Rayon, Moscow Oblast. They service 100 primapara heifers, on the average, obtaining 99 calves and about 4,000 kg of milk per cow annually. The family contract produced good results on the Vereyskiy Sovkhoz in Naro-Fominskiy Rayon in the same Moscow Oblast and on the Bayuchi Kolkhoz and on the Luunya Sovkhoz in the Estonian SSR. I believe that the popularity of such work organization will not diminish in the future.

A great deal of work, whose object is to improve the supply of meat and dairy products for the population, lies ahead. It is primarily a matter of increasing animal productivity on the basis of the further improvement in the feed base, upgrading of pedigree stock work, and extensive application of intensive technologies. Intensification is the only economically justified way of further developing animal husbandry.

11439
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LIVESTOCK AND FEED PROCUREMENT

KAZAKH LIVESTOCK, FEED PRODUCTION REVIEWED

Livestock Procurement

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 25 Dec 86 p 1

[KazTAG report: "Contribution by Kazakhstan Animal Breeders"]

[Text] Workers attached to the agro-industrial complex of Kazakhstan, in implementing the decisions handed down during the 27th CPSU Congress, fulfilled the socialist obligations of the first year of the five-year plan for the sale of animal husbandry products to the state. Roughly 1,528,000 tons of livestock and poultry, 2,800,000 tons of milk, 2.3 billion eggs and 57,000 tons of wool were shipped to receiving points. Deliveries of products to the state are continuing.

The results achieved became possible as a result of the republic having adopted additional measures aimed at eliminating the shortcomings and derelictions mentioned in the decree of the CPSU Central Committee entitled "The Work of Party, Soviet and Economic Organs of the Kazakh SSR in Carrying Out the Tasks of the Food Program and in Ensuring Accelerated and Stable Development for Animal Husbandry," strengthening the feed base, intensifying work concerned with the introduction of progressive labor methods and intensive technologies, utilizing the experience of leading workers and activating the socialist competition for farm workers.

The republic's party, soviet and economic organs are mobilizing the labor collectives for the organized carrying out of the livestock wintering operations, for utilizing all reserves and opportunities for raising productivity and the efficiency of animal husbandry operations and for unconditional fulfillment of the tasks for the second year of the five-year plan.

Party on Livestock

Moscow SELSKAYA ZHIZN in Russian 11 Jan 87 p 2

[TASS report: "More Animal Husbandry Products"]

[Text]--Alma-Ata--A sharp increase can be realized in the contribution by animal husbandry towards implementing the Food Program only upon the condition that a complete conversion is carried out over to the intensive path of development and a substantial increase is achieved in labor productivity and in the use of reserves. This was noted today by the participants in a plenum of the Central Committee of the Communist Party of Kazakhstan. A review was undertaken of the tasks of the republic's agro-industrial complex with regard to increasing the production of animal husbandry products and improving the supply of such products for the population, in light of the decree of the CPSU Central Committee entitled "Work of the Party, Soviet and Economic Organs of the Kazakh SSR in Carrying Out the Tasks of the Food Program and Ensuring Accelerated and Stable Development for Animal Husbandry."

During the plenum, a speech was delivered by the 1st secretary of the Central Committee of the Communist Party of Kazakhstan G.V. Kolbin. It was emphasized that organizational and political work aimed at eliminating prolonged backwardness in the development of animal husbandry operations throughout the republic is not in keeping with the requirements of the times. Sluggishness, a lack of desire to convert over to truly scientific managerial methods, indifference and complacency are predominating. A considerable number of the party, soviet and economic organs and individual communists are inclined to evaluate accomplishments in a non-critical manner, embellish the results achieved, exaggerated difficulties and to conceal mistakes in their work.

Serious shortcomings in the selection and placement of personnel are causing noticeable harm to the overall task.

The need for rapidly correcting the mistakes, it was pointed out during the plenum, requires, in conformity with instructions handed down during the 27th CPSU Congress, a radical change in the managerial style and methods employed in animal husbandry and a decisive campaign against negative phenomena, against substituting general appeals and declarations for reorganizational work and against the use of official status for mercenary purposes.

The party organizations and committees must appear as proponents of new and leading developments. In the process, priority must be assigned to carrying out active work in the masses and to mastering leading forms for labor organization and technology.

The organizational problem was examined during the plenum. O.S. Miroshkhin was released from his duties as 2d secretary of the Central Committee of the Communist Party of Kazakhstan in connection with his transfer to other work. S. Kubashev, who previously served as 1st secretary of the Semipalatinsk Oblast Party Committee, was selected to serve as the 2d secretary of the Central Committee of the Communist Party of Kazakhstan.

'Serious Lags' in Feed

Moscow SELSKAYA ZHIZN in Russian 28 Nov 86 p 2

[TASS report for SELSKAYA ZHIZN by A. Shelev under the rubric "A Sharp Signal: "But What Is in the Feeding Trough?"]

[Text]--Alma-Ata--At the present time, the young bulls being raised by the leader of the republic's competition for animal breeders -- the brigade of N. Imangaziyev of the Uch-Aral Kolkhoz in Panfilovskiy Rayon in Taldy-Kurgan Oblast -- remain at the level for summer weight increases. A powerful shop has been installed here for the milling and mixing of components and also lines for steaming and yeasting. There has been no increase in feed, but thanks to the manner in which it is being prepared it is now possible to convert over to the production of complete ration composite mixtures.

The experience of the Uch-Aral Kolkhoz and other leading farms in the preparation of feed has been recommended for introduction into operations by the oblast agro-industrial committee. Meanwhile, despite the availability of capabilities, one half of the feed on farms throughout the oblast is being placed in feeding troughs, by-passing the shops.

A similar picture prevails throughout the republic as a whole. The farms, in the form of feed mixtures, are preparing only one half of the amount which the shops are capable of issuing. The reasons are the same.

"Low coefficient of equipment usage" stated the deputy chief of the Administration for the Mechanization of Animal Husbandry of the republic's Gosagroprom [State Agro-Industrial Committee] V. Yesafyev, "there are still many such farm leaders who are failing to attach proper value to the task of feed preparation. Hence, we have such paradoxes: in North Kazakhstan Oblast, one out of every two feed preparation shops is inactive, despite the fact that they are all in good working order. On farms in Vozvyshenskiy and Tselinnyy rayons, the feed is being placed in feeding troughs direct from warehouses and storehouses. Feed losses are being tolerated and growth in farm productivity is not being achieved in keeping with the expenditures. To the contrary, here it is 10 to 15 percent lower than in neighboring rayons."

This is happening quite often. Of more than 3,300 feed preparation shops in the republic, almost one fourth of them are still inactive. It turns out that here there are no followers of the experience of the brigade headed by N. Imangaziyev. And the leaders of the agro-industrial committees, instead of devoting adequate attention to introducing it into operations, content themselves with merely stating the need for such action.

'Serious Lags' Examined

Moscow SELSKAYA ZHIZN in Russian 20 Jan 87 p 2

[Article by F. Novikov, deputy chairman of Kazakh SSR Gosagroprom: "But What Is In the Feeding Trough?"]

[Text] Having examined the sharp signal which appeared in the 28 November 1986 issue of SELSKAYA ZHIZN entitled "But What Is in the Feeding Trough?", Gosagroprom [State Agro-Industrial Committee] for the Kazakh SSR believes that the mentioned facts concerning the disorganized inclusion of feed preparation shops in operations and the inactive status of a considerable number of them during the livestock wintering period did actually take place.

Measures have been undertaken by the Kazakh SSR Gosagroprom and its organs in the various areas aimed at achieving maximum inclusion of existing feed preparation shops in operations on the republic's farms. In connection with this problem, specialists were dispatched from the republic's staff to some of the more backward oblasts, such as Karaganda, Pavlodar, North Kazakhstan, Aktyubinsk, Turgay, Uralsk and Tselinograd, where the mentioned difficulty with regard to the inclusion of feed preparation shops in operations took place. In the remaining oblasts, measures were undertaken by the oblagroproms [oblast agro-industrial committees].

As a result of work carried out during December 1986, 985 additional feed preparation shops were included in operations and this made it possible to raise considerably the rates for the preparation of feed for feeding to livestock. On 1 January 1987, 5,807,000 tons of feed were processed at feed preparation shops, or 1.8 million more tons than on this same date during the last wintering period. Specialists in the various areas devoted increased attention to the question of quality in the preparation of feed.

Kazakh SSR Gosagroprom is at the present time exercising increased control in the various areas over the course of the livestock wintering campaign and special attention is being given to the productive operation of feed preparation shops, to organizing maximum processing of feed and to raising livestock productivity and their protection.

From the Editorial Board: The above letter, only recently received by the Editorial Board, was signed by F. Novikov on 5 January. Unfortunately, we are not in agreement with the brisk tone of the letter, nor with the statement that the measures undertaken by Kazakhstan Gosagroprom made it possible to raise considerably the rates for preparing feed to animals. We recall that completely different facts were cited during the 10 January Plenum of the Central Committee of the Communist Party of Kazakhstan. Thus the plans for the current wintering campaign called for more than one half of the feed to be prepared for feeding to livestock. However, although approximately 40 percent of the feed was fed to livestock, only one tenth was prepared since the beginning of the wintering campaign. Other serious shortcomings in the organization of livestock wintering operations were mentioned. In its decree, the republic's agroprom and its organs in the various areas are only slowly reorganizing their work concerned with the management of animal husbandry operations and they appear to have resigned themselves to the prolonged backwardness of this branch. The response by comrade Novikov serves as one more proof of this fact.

7026
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CASPIAN OIL, GAS COMPLEX TO BE FORMED

Moscow EKONOMICHESKAYA GAZETA in Russian No 3, Jan 87 p 16

[Article by N. Tarasenko: "...The Caspian Area Will Grow: The Country's Economic Potential Is Increasing With the Creation of the New Territorial Production Complex"]

> [Text] For centuries these depths have guarded reserves of oil and gas. Exploration for the hydrocarbon raw material was unhurried, and individual deposits were built up in an uncoordinated manner. The time of sudden change that we are experiencing has dictated a different approach to extracting the natural riches.
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> In accordance with the resolutions of the 27th Party Congress and the plan for the economic and social development of the country in the 12th Five-Year Plan, formation of the Caspian oil and gas complex--second largest after the Western Siberian complex--was called for.

Territory

The Caspian region stretches out on an area of 1,362,000 square kilometers--from the steppes of Volgograd and Orenburg to the deserts of Turkmeniya and the white-flecked foothills of the Caucasus in Dagestan and Azerbaijan.

"If one would like to take in the territory at a single glance," says Professor V. Akovetskiy, doctor of Technical Sciences, "come to us at the KYePS [Permanent Commission for the Study of Natural Productive Forces of the USSR] at the Presidium of the USSR Academy of Sciences. You will see the Caspian area--from space."

...I examine the colored and black and white space photographs, average-size, covering the entire desk. The familiar contours of lake and sea stand out distinctly. Around it are straight and broken lines, unintelligible spaces and shadings. Viktor Ivanovich Akovetskiy--the author of the first textbook in our country on "Deciphering Photographs"--explains the meaning of all these lines. Facts that I had known before are filled out with new, more visible content.

One cannot help but be impressed by the perspectives of the Caspian region. According to data from the All-Union Scientific Research Institute of Fuel-Energy Problems (VNIIKTEP), 64 billion rubles will be invested in developing the region in the next two decades. Already, in the present five-year plan, capital investments in Volgograd Oblast will increase by a factor of 1.8, and the volumes of construction and installation work here will increase by approximately that much. Even larger resources are being allotted to Astrakhan and Guryev oblasts.

Just what is the reason for such fixed attention on the region? A detailed answer to this question was heard at the end of last year in Moscow at the conference of participants in the interdepartmental Caspian expedition, organized by the Commission for the Study of Productive Forces and Natural Resources (KYePS) at the Presidium of the USSR Academy of Sciences.

Here are some data from the report of academician A. Aganbegyan, KYePS chairman. The geological stores of gypsum alone on the area of the Inderskiy dome in Kazakhstan constitute tens of billions of tons. This is potential raw material for building materials and parts and the production of sulfuric acid and sodium sulfate. Pulverized gypsum can be used successfully as mineral fertilizer in agriculture. The Caspian region holds first place in the world for stores of mineral salts. Industrial concentrations of bromine, boron, and rubidium have been located in the intercrystalline salt water of Lake Inder, and the stores of them are estimated as a billion tons.

All this still remains to be taken. Meanwhile, the national economy is feeling an acute shortage of boric acid, calcium borates and borax. After all, boron and its compounds are used in many sectors of industry, agriculture, science and medicine.

The natural storehouse of the region is truly unique. It guards a multitude of infinite riches, but the hydrocarbon raw material here is given a special place.

The Trump Card

It is already clear now that Caspian oil and gas will become a powerful stimulus in the development of the country's industry. The famous expression of M.V. Lomonosov, "...power will increase through Siberia," as applied to this region can be rephrased this way: "...will increase through the Caspian region." This last has not been said merely for the sake of a clever saying.

In 1982 the State Commission of Experts for USSR Gosplan, when evaluating the geological stores of oil, gas and condensate in the region, came to the conclusion that they were equal to the total resources of the extremely rich Volga-Ural oil and gas province. This, as well as the content in the gas of scarce hydrogen sulfide raw material and the proximity to main industrial centers also move the Caspian region forward into second place after the Western Siberian TPK.

This is not the first year of development for the oil and gas region. Quite a few large and small problems are being discovered in the course of the work.

At present, 8 deposits with a stable annual extraction of 17-18 million tons of oil and gas condensate and 4 billion cubic meters of gas are being developed in Mangyshlak Oblast. The most highly paraffined oil in our country (content of up to 23 percent) is located here. It is top-quality raw material for the production of liquid and solid paraffin.

Unfortunately, many other valuable components have yet to be extracted from Mangyshlak oil. For example, so far no industrial processes have been developed to extract vanadium. Meanwhile, there is a considerable amount of it in the petroleum resources extracted on Buzachi Peninsula. Therefore, the proposal was heard at the Conference of the Interdepartmental Caspian Region Expedition that it would be expedient to organize, at USSR Gosplan, an intersectorial work group, with the participation of the USSR Ministry of the Petroleum Refining and Petrochemical Industry, the USSR Ministry of the Petroleum Industry and the USSR Ministry of Geology, to solve problems of efficient refining of the Caspian region oil.

"Two whales" in the development of the gas industry in the region--the Karachaganakskoye and Astrakhanskoye deposits--have been estimated for the period right up to the year 2005. The previously miscalculated stores of raw material are making it possible to provide dozens of billions of tons of yearly gas extraction. The actual volumes of drilling and construction and installation work, however, are making it possible to aim toward obtaining only half of this gas. Why?

In the last decade, the semi-arid land near the small station of Aksarayskaya, 50 kilometers from Astrakhan, has been unrecognizably transformed. The waves of sand dunes have been cut through by highways and railroads, electric power transmission lines extend for many kilometers and drilling rigs have gone up.

Difficult Duties

V. Koval, administrative chief of drilling operations for the No 2 trust of Astrakhanburgaz, acquaints us with the work of the collective that he directs.

"The administration fulfilled the 1986 plan for drilling--30,000 meters--ahead of schedule, in October. Over 6000 meters of wells above the assignment were drilled. The productive time reached 97 percent."

Borehole No 98 met us with a biting, penetrating wind. One of the best special duty brigades, that of P. Karlov, is working here. Despite their achievements in socialist competition, the drillers are far from being complacent and placid.

"Yes, last year the trust and the administration emerged from a long hold-up," says B. Gritsilo, assistant drilling foreman, "but we well know: the rates and quality of the drilling can be considerably higher. It is a pity that not everything depends only on us...."

Everyone knows the problems of gas extractors: from the worker to the ministry. The main ones are outfitting the boreholes with highly productive equipment, high-quality pipes and deep-well instruments to test and probe the wells....

"For many years the machine builders have been feeding us with promises to provide drilling rigs with increased load-lifting capacity," complains N. Aminov, senior engineer of the Astrakhanburgaz UBR-2 Trust. "We lowered drilling strings in two stages ten years ago, and we are continuing to lower them. What kind of drilling rates are there here!"

The oil field workers have no fewer woes. A. Amanov, drilling foreman of the Azneft Association, Hero of Socialist Labor, and V. Dinkov, minister of the USSR Petroleum Industry, spoke about them from the rostrum of the 27th Party Congress, but the questions remain open even now. They do not have the bits they need, the necessary instruments, turbo-drills, centering guides and a great deal of other equipment. The Uralmash-3D and Uralmash-4E units are rightly reprimanded.

It is still possible to explain somehow, but, certainly, not to justify the sluggishness of the allied industries. The slowness of the Ministry of the Gas Industry and the Ministry of the Petroleum Industry is amazing. In 1984 the ministries obtain experimental models of new drilling rigs, but their testing has dragged out for long years.

The conditions for developing the Caspian lowlands are quite unusual. The productive horizons of the hydrocarbon raw material here lie at a depth of 5000-7000 meters. The extraction of oil and gas is also complicated by the abnormally high bed pressure (600-800 atmospheres) and the chemical corrosiveness of the environment (up to 25 percent content of hydrogen sulfide and acidic gases). Therefore, creating special drilling equipment requires a high-strength, corrosion-resistant section. The USSR Ministry of Ferrous Metallurgy, however, appears to have little concern for this--nor are the plants of the Ministry of Ferrous Metallurgy hurrying to produce precision pipes for well sucker-rod pumps, which, just as a lot of other equipment, still have to be purchased abroad.

Construction Without Reconstruction

Volgograd and the oblast are assigned a particular place in the development of the Caspian region. The Krasnyy Oktyabr Metallurgical Plant, producing drilling equipment, and the Volgograd and Volga Pipe plants are located here. Their capacities, however, no longer meet the requirements imposed, and the construction of new ones is going neither well nor badly. It turns out that the construction workers are to blame.

In 1986 the volumes of planned work exceeded the potentials of the Volgograd construction workers by one-fourth.

"Our organization is no exception," says V. Korolev, Volgogradmetallurgstroy Trust manager. "The work volumes grow, but the base remains at the same level."

"Some 60 percent of the equipment has long been begging for spare parts," V. Pankratov, chief engineer of the Stroymekhanizatsiya Trust, enters into the conversation. "We think less of a rise in labor productivity than of an excavator or bulldozer making it through the shift."

The Ministry of Construction of Petroleum and Gas Industry Enterprises was commissioned to fulfill 1.8 billion rubles worth of construction and installation work in the Caspian region in the 12th Five-Year Plan, including 647 million worth for the Tengizskoye deposit and for the Karachaganakskoye deposit--476 million worth. These plans, however, have in no way been balanced with the capacities of the contractors. USSR Gosplan did not heed the pleas of the construction workers, and the Ministry of Construction of Petroleum and Gas Industry Enterprises did not show the proper persistence and adherence to principle.

Here is an example of a different sort. Construction workers in Guryev and Krasnovod oblasts are experiencing an acute shortage of sand and rubble. At the same time, there are large stores of this raw material literally under their feet. One small thing is lacking--initiative and efficient management.

Last year, unfortunately, was not a turning point for organizations engaged in building up new deposits in the region. The chronic diseases of capital construction were felt most acutely in Astrakhan Oblast. The acts of the working commission on putting the first section of the local gas refinery into operation have so far not been signed. The first production line started working only due to all-hands work and production spurts. Judge for yourselves, in the last months of 1986 over 6000 specialists alone were employed at the organizations of the USSR Ministry of Installation and Special Construction Work, not to work normally--there was nowhere to develop.

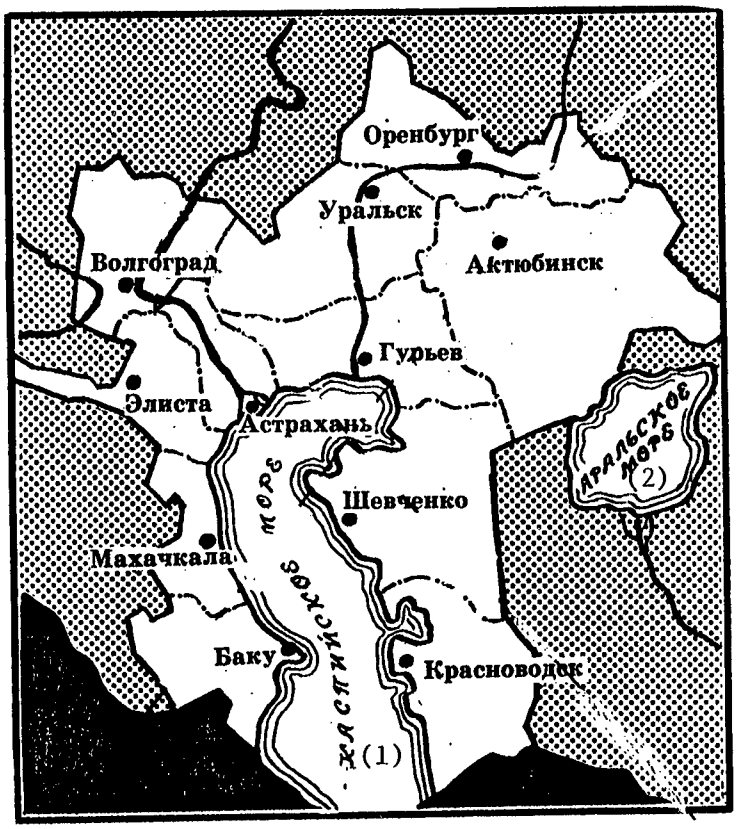
At the present time, over 16 million persons are living in the region. According to preliminary estimates, in the next 20 years the increase in the able-bodied population will increase by another 1.5 million persons. The people must be provided with housing, but its construction is extremely slow.

Development of the social-cultural infrastructure has been assigned a place in the program for building up the Astrakhanskoye gas condensate deposit. Some 800 million rubles of capital investments have been allotted for this purpose. Construction of over 1.5 million square meters of housing, 8 schools, 20 kindergartens, three movie theaters, hospitals and polyclinics, stores and palaces of culture has been outlined before 1992. But if the Glavastrakhanstroy organizations maintain the present work rates, another two five-year plans will be needed as a minimum to carry out the program outlined.

The Vector of the Future

A vector is a quantity, the specification of which, in addition to its magnitude, requires a knowledge of the direction of its effect. We know the "numerical value" of the Caspian region for the economics of the country. But the ways of achieving the outlined goal are still unclear in many ways. Moreover, you cannot break through the numerous problems with a "frontal attack."

The matter is complicated still more by the fact that these problems must be solved within the framework of four union republics and many ministries and departments.



1. Caspian Sea

2. Aral Sea

The narrowly departmental interests have indeed yielded unfortunate results. In the last three five-year plans the region has progressed at quite low rates. The disproportions in the development of the social infrastructure have proved to be substantial. Capital investments for these purposes were allotted in insignificant amounts and unsystematically, which led to estrangement of the productive forces and reduced production efficiency. By permitting the dissipation of forces and resources, the ministries often ignored the comprehensive development of the region. It is not by chance, but rather, in conformity to principle, that Dagestan, Kalmykiya and Krasnovod Oblast considerably lag behind in per capita production of industrial output, electrical energy and food products. Is there a way out of the situation that has been created?

"There is! From the national economic standpoint alone," said Academician A. Aganbegyan, when speaking at the conference of the interdepartmental Caspian expedition. "But for this we need to develop a comprehensive program of social and economic development for the Caspian region. It should determine the most important directions for specialization of productive forces in the region,

and accelerated development and fundamental reorganization of the oil, gas and refining sectors of industry, machine building, transport and construction complexes. The program will help to coordinate sectorial and territorial interests, and will specify measures to improve intersectorial and interrepublic (interoblast) economic relations."

Only a small part of the Caspian region problems have been named here. Today, when the foundation of a future territorial-production complex is being laid, their rapid solution is particularly important.

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NEED FOR STANDARDIZED TERMINOLOGY NOTED

Moscow GAZOVAYA PROMYSHLENNOST in Russian No 12, Dec 86 pp 18-19

[Article by V.D. Zakharov and I.A. Berezovskaya, VNIIEgazprom [All-Union Scientific Research Institute of Economics, Production Organization and Technical-Economic Studies in the Gas Industry]: "Standardizing Terminology"]

[Text] The development of science, technology and economics, improvement of industrial processes, introduction of new methods of production organization and automated control systems based on computer technology and the transition to new devices in the sphere of scientific-technical and technical-economic information have required the establishing of unified, unambiguous terminology, on the basis of standardizing it.

The need to work out terminological standards in the gas industry also arises from the fact that this sector has a multi-profile system, and its scientific and technical terminology includes the speceficity of mining, construction, transport, chemistry, special machine building, instrument building, means of automation etc. The merging of these specializations has entailed the appearance of a large number of terms and synonyms in technical, administrative and normative documentation, as well as in scientific-technical and instructional literature.

At the same time, most of the terms do not yet have precise definitions, and this leads to the fact that different content is included in the same terms, and to the fact that different terms, not mutually comparable, are used for the same processes and physical and other phenomena. In addition, the terminology of the gas industry does not need to be encumbered with foreign terms. We have not yet overcome the cluttering of our scientific-technical literature and normative-technical documentation with jargonistic terminology, which leads to distortion of the meaning of the questions under consideration and their incorrect interpretation.

The use of ambiguous, misleading terms in normative-technical documents leads to distorting the meaning of the documents and making the study of special technical and economic literature more difficult.

The need to standardize gas industry terminology has become urgent. A total of eight sectorial standards on terms and definitions have been drawn up. These

standards include only the basic terms and their definitions from the field of transport, storage and use of gas, labor safety regulations, and terms specifying the turbo-expanders of low-temperature units and marine oil-field structures. A total of about 400 terms have been standardized in the sector.

In addition, our country has drawn up over 600 state standards of approximately 60,000 terms, which are adopted depending on their sphere of dissemination in subsectors of the gas industry according to the planned procedure.

At present, terminological standards must be worked out in the sector which determine: the characteristics of the industrial processes, the equipment used to improve these processes, the material and energy resources consumed, and also standardize the terms according to the norm-setting in the subsectors (drilling wells, extracting gas and condensate, transport and storage of gas, processing gas and condensate and gasification). These standards should give definitions of such basic terms as "rekonstruktsiya" [redesigning], "tekhnologicheskoye perevooruzheniye" [re-equipment] and "renovatsiya" [renovation] (as applied to a gas pipeline), "kommercheskaya skorost" [schedule speed] as applied to drilling), "normativnaya skorost [normative speed], "tsiklovaya skorost [cyclical speed], "moshchnost gazovogo predpriyatiya" [gas plant capacity], "smetnaya stoimost" [estimated cost], "fakticheskaya sebestoimost" [actual cost], "stanko-mesyatsy bureniya" [machine tool months of drilling], "operezhayushcheye bureniye" [outstripping drilling], "kustovoye bureniye" [multiple drilling], and make more precise the concepts of "syryevoy gazoprovod" [raw materials gas pipeline], "mezhsistemnaya peremychka" [intersystem connector] and a number of others.

Solving the problems of standardizing scientific-technical terminology in the gas industry should be directed toward:

Optimal standardization of terminology on the basis of a systemic approach;

Priority development of standards for terms in intersectorial use;

Standardization of terminology only for normative-terminological ensurance of practical functions of the gas industry and the national economy as a whole;

Elimination of subject matter duplication by related ministries (departments) and subsectors;

Elimination of duplicating the subject matter by the standards of different categories;

Justified selection of the category and subject matter of the standard being worked out;

Centralized coordination of work on standardizing scientific-technical terminology.

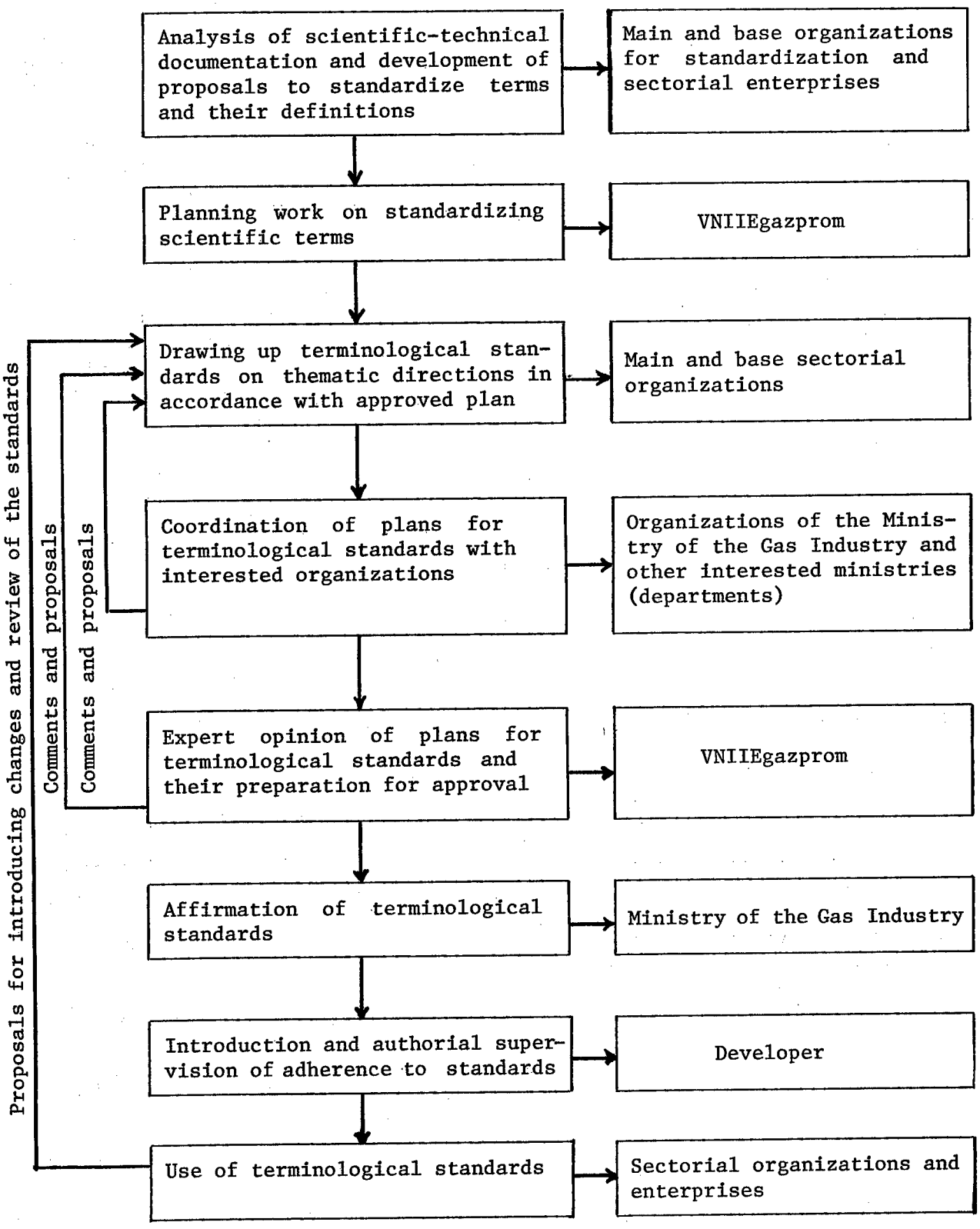

Diagram of the Organization of Work on Improving Standardization of Scientific-Technical Terminology

To solve problems in the sphere of standardizing scientific-technical terminology in the gas industry with respect to the directions of scientific and technical work and types of production, in accordance with OST [sectorial standard] 51.60-85, a central main, main and base organizations on standardization (TsGOS, GOS, BOS) are being created.

The thematic directions for this standard are distributed as follows:

VNIIEgazprom (TsGOS)--production economics and organization; planning and scientific-technical information in the gas industry; nature and environmental protection;

VNIIgaz (GOS)--development of gas and gas condensate deposits, technology of extraction, transport and underground storage of gas, processing gas and gas condensate; special protection of structures for gas extraction and transport against corrosion; conservation of the air basin during operation of the sector's industrial projects;

Gazoapparat DNPO (GOS)--household apparatus operating on gas, liquid and solid types of fuel;

VNIPImorneftegaz (GOS)--developing marine deposits, operating hydraulic structures and floating technical devices; performing underwater technical work; environmental conservation during the development of marine oil and gas deposits;

VNIIpromgaz (BOS)--industrial equipment using gas;

Gazpriboravtomatika Special Design Bureau (BOS)--development, technology of manufacturing, operation and repair of instruments, means of automation and tele-automation of automated control systems in the gas industry;

Turbogas Special Design Bureau (BOS)--turbo-extender and gas-pumping units; equipment for the use of secondary energy resources for gas-pumping units with gas-turbine drive; a system for purifying cycle air, sound-absorption and cooling the oil of the the gas-pumping units; well equipment (mouth and underground) to develop gas and gas condensate deposits and underground gas storages;

SevKavNIIgaz (BOS)--drilling gas and gas condensate wells, environmental protection during well-drilling;

Soyuzgazproyekt (BOS)--development and introduction of printed technical planning devices (PTSP);

VolgoUralNIPIgaz (BOS)--environmental protection when developing and operating deposits containing hydrogen sulfide;

TyumenNIIgiprogaz (BOS)--development and manufacture of special industrial equipment on the basis of swamp-crossing equipment; environmental protection when opening up and operating deposits under tundra and permafrost conditions;

NIPIgipromorneftegaz (BOS)--corrosion protection for marine structures and equipment; technology of operating and repairing underwater pipelines, floating drilling rigs, block drilling and oil-field equipment; transport and storage of oil and gas under marine conditions;

NIImorgeofizika (BOS)--marine geophysical work on oil and gas; industrial geophysical research in marine wells;

VNIImorgeo (BOS)--marine geological-engineering exploration on the continental shelf.

In order to more precisely define and substantiate the recommended directions in the sphere of standardizing scientific-technical terminology and suggest new directions, they undergo a thorough scientific-terminological systems analysis by specialists from the main and base standardization organizations, which reveals the terminological guarantee of a given thematical direction, as well as the need to work out new ones, and, by revising existing standards for terms and definitions, selects their categories and establishes their interrelation.

To work out the thematic directions for standardizing the terminology for intersectorial use, it is expedient to create an intersectorial (Ministry of the Gas Industry, Ministry of Construction of Petroleum and Gas Industry Enterprises, Ministry of Geology, etc.) group of specialists who, under the direct guidance of the VNIIKI [All-Union Scientific Research Institute of Technical Information, Classification and Codification] of Gosstandart, would implement, in a centralized manner, all the work in the sphere of standardizing scientific-technical terminology for intersectorial use.

The state of the terminology is being analyzed within the framework of the scientific-research work, and the need to develop new or revise existing sectorial terminological standards is established according to the results.

The basis for drawing up a new standard for terms and definitions is the presence in the given terminology of phenomena such as polysemy, homonymy and synonymy, which make unambiguous interpretation difficult when they are used in normative-technical documentation.

A revision of the existing standards must be planned if the scientific-technical terminology specified in them does not correspond to the current developmental level of science and technology.

We recommend that work on improving standardization of scientific-technical terminology in the sector be organized in accordance with the diagram shown in the sketch.

In order for all the sector's specialists to have at their disposal all the standardized terminology used in normative-technical documentation for the gas industry, it is proposed that in the future (on the basis of the terminological standards) a sectorial dictionary of standardized terms be created.

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GAS INDUSTRY MINISTER CALLS FOR ACCELERATION

Moscow GAZOVAYA PROMYSHLENNOST in Russian No 12, Dec 86 pp 1-5

[Article by V.S. Chernomyrdin, minister of the Gas Industry: "Reorganization--Accelerated and Comprehensive"]

[Text] Today all the stepped-up creative efforts of the soviet people are merging into a powerful movement, designated by the all-encompassing word "reorganization," originated by the historical April (1985) Plenum of the CPSU Central Committee. The innovative course and energetic actions of the CPSU Central Committee have obtained the unanimous approval and full support of the people.

The importance in principle of reorganization is the fact that it is a necessary and urgent step along the road to achieving a new, high-quality state of soviet society, in the process of putting into practice the strategical course of the party to accelerate the country's social and economic development. In essence, reorganization is a genuine revolution. It is a turning point in the minds and hearts of the people and in their psychology and understanding of the nature of the present-day period. It touches everyone and everything.

The depth, quality and scope of the reorganization taking place in the gas industry must above all be evaluated from the standpoint of solving the strategic problems of the sector's development, which were precisely defined by the USSR Energy Program for the long-range perspective. The ministry is now completing the drawing up of proposals to refine this program for the period up to 2010.

The main task of the sector for the future is reliable provision of the national economy with fuel and chemical raw material while pursuing an active energy conservation policy everywhere. An important role in putting into effect the sector's strategical course belongs to the 12th Five-Year Plan, at the end of which gas extraction is to rise to 850 billion cubic meters. The extraction of condensate and oil should increase by a factor of 1.7, and the volume of gas processing--by a factor of 1.4. The task of sharply increasing the output of gas processing, increasing labor productivity and improving other technical-economic indicators has been set. We cannot solve these problems without a substantial increase in the rates of scientific-technical

progress, thorough reorganization of administrative systems and management methods, a real improvement in capital construction matters and introducing order in the execution of the decisions adopted.

The gas industry has already achieved high developmental rates under the conditions of reorganization. The results for nine months of the year attest to this. In actually evaluating the work of our enterprises, associations, main administrations and individual management directors, however, the concludion may be drawn that there has not yet been a fundamental turning point in action and thinking. In many of our operations, the new is next to the old, often the directors do not see the living matter, nor indeed even the people themselves, for the figures, and do not analyze the difficulties and shortcomings. Many people still overemphasize the results of our work and this, as a rule, leads to retardation or else even throws us backwards.

Some organizations and enterprises are not coping with the plan to supply products, with the introduction of basic objects, production capacities, housing and social, cultural and everyday living projects, with plans for profit, production cost and labor productivity and with the assignments for conserving fuel-energy, material and labor resources. In many cases plan fulfillment is achieved at any price, without consideration for the end economic results. Unproductive expenditures are still high, and internal working capital is still inefficiently used. Most of the associations expend financial resources, not for the specific purpose, but in diverting them to unprofitable activity and to above-norm stocks.

A thorough examination, using the Ukrgazprom Association as an example, of the course and results of reorganization at the work places showed that, despite the abundance of words on reorganization and the full set of necessary measures, the style and methods of work of the directors of this association and its enterprises had undergone no changes. The long-range plans had not been taken to the shops and production services. The directors and specialists of the all-union production association staff and the production associations devote their chief attention to operational work, neglecting the most important, central questions.

The council of directors of the association has not found it possible during the past period of the year to discuss at its meetings the course of work on accelerating scientific-technical progress nor to examine the problems of reorganizing and improving the style and methods of work of the directors and specialists. Whatever did take up attention was not reinforced by efficient decisions, and supervision of the fulfillment was not organized. Problems of capital construction were four times examined at the council, but the plan for introducing fixed capital is not being fulfilled, which indicates the low level of organizational work by the client. The amounts of the fines for nonfulfillment of the contractual obligations are increasing, above-norm stocks of unspecified equipment are accumulating and the number of prolonged construction projects is not decreasing.

The fact that work in the associations is being done in the old way can be clearly seen from the example of drawing up proposals to improve the structure. Even the top directors of the production associations and UkrNIIgaz have been drawn into forming them.

Instances of a superficial, at times even irresponsible attitude toward fulfillment of decisions are frequent. For example, at the beginning of the year the Kharkov and Poltava GPU [gas industry administration] were commissioned to eliminate, by 1 September, above-norm stock of wells, both inactive and awaiting development. This indicator, however, in these subdivisions as of 1 October had even worsened. The association's specialists, though, satisfied with the high figures for overfulfillment of the extraction plan, seek only justifications for their subordinate organizations. They report in the official materials that the competition for efficient use of the well fund is supported by all the collectives. Here, as a matter of principle, the directors and specialists must be asked about their attitude toward reorganization and their personal contribution to the search for production reserves.

Just what has changed in our work since the April (1985) Plenum of the CPSU Central Committee, and particularly in the main direction--acceleration of scientific-technical progress?

In conjunction with the related ministries and departments, programs were approved to develop new equipment for the gas industry, raise the technical level of the goods produced and remove obsolete equipment from production. Relations with academic and VUZ science were expanded.

Definite results were achieved in the organization of sectorial science: the network of scientific-production associations was expanded, the procedure for making out applications for the development of equipment was simplified and supervision of assignment fulfillment was intensified.

Our country has worked out many highly efficient technical decisions, which are being carried out, for example, in building up the Yamburg deposit.

At the same time, the work of many scientific research organizations still fails to provide an important return. The collegium recently reviewed the activity of VolgoUral NIPIgaz, SredAzNIIgas and UkrNIIgaz. The general shortcomings in their work, just as at our other institutes are the low level of many developments, dispersion of the scientific potential for solving specific problems and lack of major work directed toward solving long-range regional problems.

A particularly unfortunate situation has formed at SredAzNIIgaz. The economic effect from introducing developments at this subdivision dropped from 8.5 million rubles in 1981 to 2 million rubles in 1986.

The insufficient efficiency of the work of these organizations is to a considerable extent caused by the fact that the associations above them do a poor job of monitoring the institutes and often overburden them with work on compiling all types of inquiries, records and reports. As a result, the scientific and technical potential of the associations is utilized extreme unsatisfactorily.

The weakest link in the "science-production" chain is the slow introduction of completed developments able to ensure perceptible results even in the near

future. At the same time, our associations occupy a passive position here. For example, Orenburggazprom delayed for a year putting into experimental-industrial operation the GPA-Ts-6,3 unit with a corrosion-resistant design. This same association delayed for several months the start of testing turbodrills with laser-machined bearings. Armgazprom is indecisive with respect to the problems of constructing and putting into operation a complex for compressed natural gas. Severgazprom shows little concern for the construction of the first experimental steam-gas unit at the Gryazovets Compressor Plant.

Today the problem is posed, not only of introducing developments, but also, most important, guaranteeing their high scientific-level, not inferior to the world level.

It should be noted that not only the scientific research institutes themselves are to blame for the insufficient effectiveness of the work of the sectorial scientific research institutes. After all, the plans are formed with the direct participation of the associations, enterprises, planning institutes and central apparatus of the ministry.

The task of the functional subdivisions of the ministry, and particularly, the Technical Administration, is to implement strict control over the work of the institutes and scientists, to direct them toward solving important problems, and not to be satisfied with trivial improvement.

There must be considerable intensification of work in the sphere of production automation. So far there has been no success in obtaining, through this, tangible results in increasing labor productivity, releasing a number of operations personnel or ensuring high reliability in the basic industrial processes. For example, the lagging behind in automation of auziliary projects at the Tyumentransgaz, Ukhtatransgaz, Kuybyshevtransgaz, Bashtransgaz and Volgogradtransgaz associations forces over 1500 stokers and machine operators to perform heavy physical labor.

In order for scientific-technical progress to become, actually, an important lever in production intensification, we must concentrate scientific forces on the main directions continue to improve the administrative structure of sectorial science, draw all colleagues into the creative process and raise the personal responsibility of the scientists. Questions of creating and introducing new equipment and advanced technology should become just as much of a daily concern for each director as fulfilling the production assignments.

Converting the associations, enterprises and organizations to new methods of management, beginning from 1 January 1987, is a central component in the reorganization of all of our activity.

The basic principles of the new economic mechanism lie in augmenting the role of the five-year plans and broad application of stable economic norms. The rights of the associations and enterprises with respect to technical improvement of production, material incentive and the social development of the collectives are being expanded. At the same time, there is an increase in their

responsibility for fulfillment of the production plan and goods supply and for the efficient use of funds and material, labor and financial resources.

The new management methods affect all aspects of our activity and, consequently, the preparation for the transition should be made in a comprehensive manner, in all units, and should encompass all the services and each worker, for their achievement of high final results. It is above all necessary to organize work to ensure unconditional fulfillment of the assignments of the five-year plan for extraction of gas, condensate and oil and for product output. The five-year plan is a law and is not open to change. Everything that will be extracted and produced above this plan is stimulated through heightened norms.

An analysis of the state of readiness for transition to the new work conditions, using the example of such all-union production associations as Soyuzuzbekgazprom and Turkmengazprom, showed that many services were poorly or not at all prepared for the use of the economic levers introduced.

The new management methods specify concentration of all financial, material and labor resources in the hands of the director of the production association and enterprise, and the success of the matter will in many ways depend on where these resources are directed and how they are distributed. At the same time, the director should be in thorough control of the economic levers, and many of us await something.

Transition to the new economic conditions requires a fundamental reorganization of the work of sectorial economic science, headed by VNIIEgazprom. We have many complaints against this institute, which in the last few years has somehow lost face and is doing little work on the most important problems of the sector. This is not really the time to be satisfied with superficial recommendations on improving economic activity at the level of the sector and subsectors. There must be not only deeper participation, but also the basic influence of VNIIEgazprom, as of other institutes, on substantiating the indicators for long-range development of the sector and working out efficient proposals to utilize the reserves of the associations and enterprises.

Having no time to gather momentum, we should do everything possible to make the transition to the new conditions of management and wages timely and complete, ensuring the maximal return expected from it.

Ensuring high developmental rates for the sector requires a sharp improvement in the qualitative level of drilling operations. Even though the drilling organizations fulfilled the nine-month plan, there has not yet been a fundamental turning point in their work, and the need for reorganization is felt particularly acutely here.

The state of affairs with well construction remains tense. For example, at the Yamburg deposit, Tyumenburgaz turned over 18 wells, with the plan--48, and Kubanmorneftegazprom--1 instead of 15. The drilling-out of the Karachaganakskoye deposit, and the lagging behind in drilling for oil at practically all the enterprises of Glavmorneftegaz arouse serious concern.

Without a serious fundamental reorganization, simplification of the structure and elimination of the small independent organizations not directed toward the general end result--turning over wells with completed construction--there will be no decisive turn toward reducing drilling cost.

Reorganization of such an important section of our activity as capital construction has been poorly dealt with. Although certain progress has been noted here recently, its organization as a whole requires radical improvement.

Our main trouble lies in the fact that we have not changed our attitude toward the problems of capital construction and within the ministry system continue to work and think in the old way. The directors of UKS, UPIR, Glavstroygazoprovod, and the Administration of Procurement often fail to coordinate their operations and do not link up the problems of planning capital investments, production capacities and fixed capital with providing the construction projects with project-estimate documentation, equipment and material-technical resources. This problem has been repeatedly discussed and examined specifically both with the directors and as applied to individual construction projects, but the desired improvements are lacking. The results also indicate this.

For example, in fulfilling the plan for 9 months for construction-installation work by 107.8 percent, the plan for capital investments and introduction of fixed capital proved to be unfulfilled. Fulfillment of the assignments for introduction of the linear section of gas lines, compressor plants, cable communication lines, housing, children's preschool institutions, polyclinics, hospitals, vocational and technical schools and a number of other projects was not ensured.

One of the main shortcomings in capital construction is the poor quality and low technical level of the designs, which do not specify advanced forms of servicing projects, unjustifiably overstate the estimated cost of the construction project and include numerous auxiliary objects.

The VNIPIgazdobycha continues to issue poor-quality planning documentation. For example, at the booster compressor plants for the Urengoy deposit, unnecessary buildings and facilities and heavy building structures are specified, and the area of the master plan has been increased. As a result, the cost of the booster compressor plants exceeds the cost of the compressor plants at the gas lines, equipped with analogous units, by more than two-fold.

The sector has still not introduced order into on-time completion of projects, and the planning-estimate documentation for the construction volume in 1987 is delayed in arriving. Today we are within our rights to ask for such work organization not only from the UPIR management, but also from the directors of our institutes. The decision has therefore been made to have a special review of this problem at the collegium, in order to adopt additional measures to correct the situation.

The role of the client-associations should change radically. They are the ones who, under the new management conditions, should fight for advanced decisions and a reduction in the estimated cost of objects. So far the position of the association directors is to construct a few more projects and obtain a little more of the capital investments.

Reorganization of the administration of capital construction should be accompanied by a review of the functions, style and methods of operation of the subdivisions of the sector and the central apparatus of the ministry.

When forming the plans for capital construction, the Administration of Capital Construction, the Planning-Economic Administration and the sectorial administrations of the ministry should evaluate the effectiveness of capital investments in various regions and distribute them in consideration of ensuring the effect of the development of the sector as a whole.

Economic criteria should play a decisive role in planning and distributing capital investments and in forming a long-term policy for capital construction.

Serious shortcomings in providing the construction projects with complete sets of equipment reduce the efficiency of capital investments. We have often reviewed the situation with regard to the use of unspecified equipment and have outlined measures to reduce the stocks of it, but there have been simply no essential improvements. Just as before, mismanagement and wastefulness, and sometimes even direct irresponsibility are being tolerated in this matter. At the same time, the proper supervision on the part of the Administration of Equipment Procurement, the Administration of Capital Construction and Glavstroygazoprovod has not been established. What is more, the directors of these administrations, instead of solving the problems of using unspecified equipment jointly and efficiently, often begin to put the blame on each other, proceeding to mutual accusuations.

The unsatisfactory situation with respect to equipment use is in many ways the result of an irresponsible attitude toward the fulfillment of many decisions that we have made. For example, with a view to the most efficient use of the available equipment, in April of last year a special committee was formed at the ministry. It was to hold a quarterly review, with the participation of the directors of the associations, of the state of using stocks of unspecified equipment and to take measures to reduce them. So far, however, the committee has held not a single meeting.

I direct the attention of all the directors in the sector to the need for a profound analysis of the state of affairs regarding the use of unspecified equipment, so that a sharp reduction in the stocks of it will be achieved as early as next year. This is also dictated by the intensification of economic sanctions for above-norm stocks.

The results of the reorganization taking place are most visibly manifested in our attitude toward solving such extremely important national economic problems as economical use of fuel-energy and material resources. The work done in the sector recently has made possible a considerable reduction in the number of associations and enterprises that permit overexpenditure of material resources. At the same time, a number of associations have not coped with the assignments for economy. They include: Kaspmorneftegazprom, Chernomorneftegazprom, Aztransgaz, Gruztransgaz, Ukrgazprom and others.

A number of associations have paid sizeable fines this year for the overexpenditures of material resources permitted. At the same time, the main reason for them was not the strict standard of the established norms, but the associations' inability and unwillingness to reorganize their work.

These omissions in many ways stem from the inadequate organizational work on saving resources performed by directors of the subdivisions of the ministry's central system. They have not yet created in their collectives, as well as in the territorial main administrations, associations and enterprises, the conditions for an uncompromising attitude toward wasteful expenditure of resources, do not make a proper analysis of their use and do not evaluate in principle the facts of squandering national property.

I wish to remind all the directors of their personal responsibility for saving material resources. We will strictly evaluate the work of each labor collective according to fulfillment of these indicators. It is time to have economy become the norm of life for all workers in the sector.

One of the most important directions of intensification, especially for our capital-intensive sector, is improving the use of production capacities and fixed capital.

In order to improve the use of capacities in transporting gas, we adopted the decision that work be performed in accordance with a revision of planning indicators for gas lines, in consideration of the changes in their load and actual technical condition. So far, however, this work has not been fulfilled by the planning institutes.

We expect an improvement in the use of production capacities and fixed capital through putting into effect the program, outlined for the five-year plan, of updating production on the basis of re-equipment and modernization of the enterprises. Even though the plans for updating production have been compiled for all the associations and enterprises, there is still a wealth of work here.

Considering the obsolescence of the productive capital in the gas industry, particularly in gas transport and processing, the administrations of the ministry, associations and enterprises must review the already compiled five-year plans for the purpose of increasing the efficiency of these operations.

One of the main criteria for evaluating our reorganization is the attitude toward solving the problems of the sector's social development. The state of affairs here, however, raises serious alarm. For example, in 9 months the plans for all items of residential housing construction have not been fulfilled, above all in extremely important regions, such as Tyumen and Astrakhan oblasts. As a result, the sector's workers in these regions have been underprovided 47,000 square meters of housing since the beginning of the year.

The resolution adopted by the CPSU Central Committee on the results of the trip made by Comrade M.S. Gorbachev to Krasnodarskiy and Stavropolskiy krays directed serious attention to the need to improve the style and methods of personnel

work. At the same time it was noted that the ministries continue to send out an already excessive number of various circulars, frequently creating the appearance of active work, but not fulfilling the specific assignments and commissions in good time. In this way, paperwork substitutes for the organization of work with initiative. These comments have direct bearing on the work of our ministry as well.

In 9 months of 1986, the ministry received and sent out about 160,000 documents. Although the number of them was reduced by over 27,000 as compared with the corresponding period last year, we should not flatter ourselves about this. We must persistently continue work on reducing the document turnover, since it is unjustifiably high.

The organization of affairs with respect to our accounting is by no means satisfactory, either. Despite the categorical ban on introducing and assembling illegal accounting, 116 forms of this accounting amounting to 97,000 indicators were used at the enterprises of the ministry.

The ministry has now created a Committee on Regulating and Reducing Official Correspondence, which is to make a careful analysis of the state of affairs and give specific suggestions. It is time to take the load of unnecessary papers from our workers and to reorient their thinking toward a deeper analysis of the basic operations and intensifying the monitoring of decisions made.

There are complaints about difficulties with operational coordination and document-signing due to the purely formal and bureaucratic attitude toward the matter held by some directors in the system. This style of work is impermissible and must be decisively eliminated, and every measure must be taken for a sharp rise in executive discipline. This becomes particularly urgent in connection with the outlined reduction in the personnel number for the administration, which entails increased loads on each worker.

The times require a new way of looking at the existing problems, of giving a critical interpretation of what has been done and of eliminating shortcomings. The course of reorganization in each work collective must be carefully analyzed. It must be given greater scope, so that matters are changed for the better at each section. Permit me to express my firm confidence that the workers of the gas industry will rise to the tasks set by the CPSU Central Committee and the Soviet Government and will justify with honor the trust given them.

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PROSPECTING FOR COAL DESCRIBED

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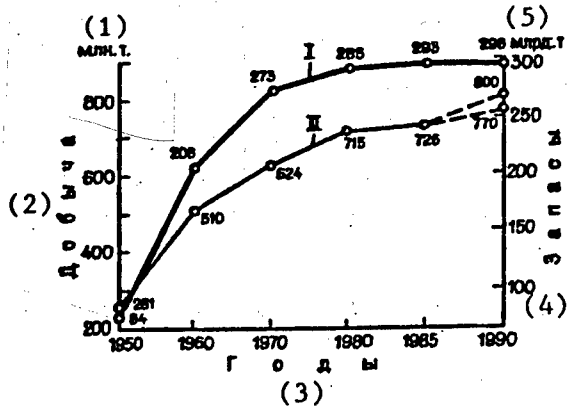
[Article by V.F. Cherepovskiy, of Mingeo [USSR Ministry of Geology], and M.V. Golitsyn, of VIEMS [All-Union Scientific and Technical Institute on the Economics of Mineral Raw Materials and Geological Exploration Operations], under the rubric "Implementing the Decisions of the 27th CPSU Congress": "Long-Term Directions For Coal Prospecting in the USSR"]

[Text] The energy program and decisions of the 27th CPSU Congress call for further development of geological prospecting for coal, particularly in deposits of difficult-to-obtain coking coal and sections that are suitable for open pit mining. Fifty-eight deposits containing reserves totalling 16.7 billion tons were opened up for development during the 11th 5-Year Plan. The USSR GKZ [USSR State Commission for Useful Mineral Resources] has confirmed coal reserves totalling 15.3 billion tons (117% of the plan), including 8 billion to be mined using the open pit method. In the Kuznetsk basin, 14 sections containing reserves of 3.6 billion tons of coal were explored, including 2 billion tons of coking coal and 1 billion tons to be mined using the open pit method. Major reserves (3.2 billion tons) of high-quality coking coal and anthracites were explored in the Donets basin. In Kazakhstan, the huge Shubarkolskoye deposit, in which reserves of low-ash bituminous coal suitable for open pit mining reach 1.5 billion tons, and the Borla deposit (500 million tons) were discovered. In Eastern Siberia: the Ishideyskiy and Motovskiy sections of the Voznesensk deposit, containing reserves suitable for open pit mining of around 1 billion tons were explored; reserves of coking coal in the promising Ulukhemskiy basin were reexamined and significantly increased; and the potential of the Syradasay deposits in the Taymyrskiy basin containing major reserves of coking coal was evaluated. In Southern Yakutiya, the Elginskoye deposit containing reserves of over 2.5 billion tons of high-quality coking coals suitable for open pit mining was discovered, and the coking coal reserves in the Denisovskoye deposit were confirmed. In the Far East, the Yerkovetskoye lignite deposit with reserves of 540 million tons was explored for possible open pit mining, and the Solitsevskoye deposit in Sakhalin (100 million tons) was explored. As a result, coal reserves in thoroughly explored reserve sections reached a total of 83 billion tons, including 10 billion tons of coking coal and 60 billions tons earmarked for open pit mining.

The total amount of thoroughly explored reserves in developed sections and sections prepared for development reached 133, 28 and 77 billion tons, respectively. Reserves in categories A, B and C amounted to almost 290 billion tons (see Fig.). All this ensures that plans for coal mining development in the USSR will be achieved.

Operations were run most efficiently in the Kansk-Achinsk basin, where the cost of exploring 1 ton of reserves in 1981-1985 was only 0.2 kopek. It cost around 3 kopeks to explore 1 ton of reserves in the Kuznetsk, Karaganda and Pechora basins, and on the order of 5 kopeks in the Donets and Podmoskovnyy basins. The complexity of the geological structure of the sections had a considerable effect on the cost of exploration. For example, the cost of exploring 1 ton of coal reserves in sections in the Donets basin classified by the GKZ as category 1 in terms of complexity was 3 kopeks; for sections in category 2 the cost was 5 kopeks, and for sections in category 3--9 kopeks. In the Kuznetsk basin, the corresponding figures were 0.3, 1.7 and 2.5 kopeks.

At the same time, negative aspects were also noted. A number of explored sites are situated unfavorably from a geographical standpoint, far away from industrially developed regions. At the present time, certain regions with severe shortages of fuel are being inadequately supplied by explored coal reserves (Urals, Central Asia, Western Kazakhstan, Primorskiy and Khabarovskiy Krays). Most of the sections containing coking coal are characterized by mining and geological conditions that are complex from the point of view of development. In addition, there is a definite discrepancy between the structure of explored coking coal reserves, and the developing demand structure. The proportion of sections containing gas-caking coals is high; at the same time, there is a shortage of areas with difficult-to-obtain coking coals. All this creates a need for further development of geological prospecting for coal that leans towards expanding prospecting and preliminary exploration at the cost of reducing to a certain extent the amount of detailed exploring done. The increment in reserves explored in detail will be 5.7 billion tons. In addition, 3.6 billion tons of category C1 reserves and 6.4 billion tons of category C2 reserves will undergo preliminary evaluation. The GKZ will confirm reserves totalling 10 billion tons.



Provision of coal production (II) with explored reserves (I) in 1950-1990.

Key:

1. Millions of tons
2. Production
3. Years
4. Reserves
5. Billions of tons

Let us examine the most important directions in coal prospecting for the 12th 5-Year Plan and in the long-term.

1. Prospecting and exploration of Zh, K and OS ranks of coking coal deposits in the Donets, Kuznetsk, Pechora, Karaganda, Ulukhemskiy, Southern Yakutsk, Tokinskiy, Apsatskiy and Lvov-Volynskiy basins must be expanded. It is important that the condition of the coal in the Pechora, Kuznetsk and Karaganda basins be examined with respect to thickness and ash content in order to bring the huge reserves of coal there that are difficult to upgrade but easy to cake, as well as shallow coal seams, into the coking sphere.

2. Exploration of sections that are suitable for open pit mining in the Kuznetsk, Kansk-Achinsk, Irkutsk, Minusinsk, Turgayskiy, Nizhneiliyskiy and Shubarkolskiy basins, and in deposits in the Far East and Central Asia, should be continued. At the same time, reserves of coal that are suitable for open pit mining should be reappraised in light of the development of high-capacity mining equipment and means of transport; in this context the possibilities of substantially increasing cut-off stripping ratios from 10 to 20 m^3/t or more, and consequently increasing open pit reserves as a whole, and in the Kuznetsk basin in particular, should be reevaluated. For example, in the GDR and United States, surface mining operations with stripping ratios of 20 and 30 m^3/t are considered profitable.

3. The problem of increasing explored coal reserves in the European USSR, where 80 percent of coal consumers and 10 percent of reserves are concentrated, is particularly severe. Along with exploration in the Donbass, geological exploration operations in the Pechora basin should also be significantly accelerated, both for coking and power-generating coal. This basin can supply coal not only to the Central Regions, but also to the Urals; moreover, it can also satisfy export demands. Evidently, the time has come to reevaluate the potential of the Podmoskovnyy basin, where coal extraction is dropping from year to year. The constant worsening of conditions in terms of seam depth has meant that conditional reserves in the basin have decreased by several times. This is intolerable. The convenient economic and geographical location of the basin, and the shallow and uniform depth of the coal seams compensate to a great extent for their chief disadvantage--their high ash and moisture content. The possible presence of coal in Paleozoic, Mesozoic and Cenozoic deposits in the whole region between the Podmoskovnyy basin and the Urals must be investigated.

4. Prospecting and exploration of Jurassic and Paleogene bituminous coal deposits in the Ural region should be speeded up in order to reduce deliveries of coal from other regions.

5. Sites within developed coal basins and adjacent regions should be identified for preliminary, and if necessary, detailed exploration.

6. Evaluation of the potential of the Taymyrskiy, Tungusskiy, Lena and Zyryanovsk basins should be completed by the end of the 20th century, since at present the significance of the predicted trillion tons of potential reserves there is still completely unclear. This must be made clear principally in order that the overall directions for the development of the coal industry in Siberia can be determined.

7. In the Far East, the primary task is to speed up evaluation and exploration of the Tokinskiy coal basin, which contains enormous reserves of coking coal; this applies particularly to the Elginskiy deposit, whose thick seams can be mined using the open pit method. If we consider that there are no large oil or gas deposits in this region, then the exploration of this basin becomes a matter of state importance. The development of this basin will require the construction of 200 km of railroad from Zeya station to Toko Lake.

8. The quality and production properties of coals must be studied in greater detail in order to obtain a reliable estimation of where they can be used within the national economy, to establish whether or not high-ash and lean coals can be used for coking, and whether bituminous coal and lignite can be used in the production of synthetic liquid fuel. Investigation of the mineral component of coals and country rocks will make it possible to suggest ways in which they can be used jointly within the national economy. This is particularly true of the Southern Yakutsk (Aldan-Chulman Rayon), Pechora, Karaganda and Ulukhemskiy basins.

9. Expansion of the stratigraphic range of industrial coal contents within the developed basins is very important. Considering how much these basins have already been studied, it would seem difficult to expect anything substantially new; nevertheless, the possibilities here have still not been exhausted. In particular, the potential of the Upper Paleozoic deposits on the southern fringe of the Jurassic Kansk-Achinsk basin must be evaluated; only one deposit is known so far in this region--the Belozersk deposit, in which 22 seams of bituminous coal ranging in thickness between 1 and 4 metres have been exposed. By decreasing the volume of detailed exploration in the Jurassic deposits in this basin it will be possible to investigate the bituminous coal and Permian deposits in the region quickly and effectively. In the Ulukhemskiy basin, in addition to exploring the Jurassic coals that are suitable for all practical purposes only for underground mining, the Upper Paleozoic coal deposits (Aktalskoye, Onkazhinskoye) containing thick (up to 30 m) horizons of fat coals suitable for open pit mining, should also be explored soon. In the event that positive results are obtained, the significance of the basin as a coking coal base would increase considerably. The possible presence of coal in the Jurassic deposits beneath the productive Paleogene formations in the Southern Ural basin should be evaluated (Jurassic lignite seams between 0.8 and 8 m thick have been exposed in the Klyuchevsk trough). Here the Yakunovskaya, Dmitriyevskaya, Matveyevskaya, Suranayskaya and Kazlair-Yalchinayevskaya depressions should be tested by drilling. Seams of Jurassic lignite up to 30 m thick have been exposed in the Kuznetsk basin on the border of the western Siberian lowland. In the Karaganda basin, the unworkable reserves in the Ashlyarikskaya formation lying beneath the main productive Karaganda series, as well as the unworkable coals in the Verkhnetentekskaya series, should be reevaluated.

10. Exploration of atypical sections in the developed Kuznetsk and Donets basins must be accelerated. The development of these sections will make it possible within a short time to increase coal extraction by means of small mines and open pits. It is extremely important to reexamine the potential of technically inaccessible sections, as well as reserve blocks in active and surface mines that have been explored but are considered unworkable, in the "other" group, and hence remain outside the visual field of planners and

geologists. For example, the reserves of difficult-to-obtain coking coals in the Mine imeni Lenin in the Kuznetsk basin total 37 million tons, while the "unworkable" explored reserves beyond the mine's technical reach amount to 279 million tons. Similar reserves in the neighboring Mine imeni Shevyakov have been estimated at 154 million tons. There are many such reserves in the Donets and other basins. Reinvestigation of these reserves will make it possible to increase the true reserves of coking coal significantly.

11. Bringing high-ash but good caking coal into the coking sphere will make it possible to increase the reserves of coking coal significantly. The reserves of such coals within the developed basins have been estimated at several billion tons. Construction of new cleaning plants will make it possible to use these coals for direct purposes, and not for generating power. For example, the opening of two cleaning plants in the Karaganda basin made it possible to nearly double the use of high-ash coals for coking. The reserves of such "power-generating" coals at relatively shallow depths exceed 3 billion tons. High-ash coal processing plants produce coking coal (34 percent yield), a power-generating concentrate (22 percent yield) and an intermediate product containing 35 percent ash (25 percent yield) that is being successfully used for power generation. Thus over 80 percent of the coal delivered for cleaning is being put to use. In the Pechora basin, the reserves of high-ash but good caking coals from the Intinskaya formation in the Vorkuta deposit alone total more than 800 million tons. At the present time, these reserves are classified as workable power-generating coals. These coals contain between 20 and 35 percent ash. The yield of concentrate with a density less than 1.4 and an ash content of 8-11 percent is between 28 and 65 percent, i.e. these coals can successfully be used for coking in the metallurgical plants of Kazakhstan and the Urals. The Intinskiy seams situated in the center of the Vorkuta deposit can be partly developed using existing mines situated on the peripheries of the Vorkuta trough. High-ash fat coals are also present in the Kuznetsk basin (Osinovskiy Rayon), where they lie in seams 2-3 m thick and are unjustifiably included in the power-generating category. Upgrading the coals (the proportion of the overall cost of producing the coal is only 10 percent) will make it possible to increase the reserves of raw coking material considerably.

12. One of the resources that can be used to increase the workable reserves of coking coal are gas coals. These coals acount for almost 45 percent of explored reserves and only 25 percent of the Union's total coke charge (in the Donbass--30-35 percent, in the Kuzbass--20 percent). For this reason a significant portion of the gas-caking coals mined at present is used for power generation. For example, of the 12.3 million tons of these coals mined in 1984 in the Western Donbass, only 1.2 million tons, or 10 percent, was used for coking. In the Lenin Rayon of the Kuzbass, only 4.3 million tons out of 15 million was used for coking. Experimental studies have shown that gas coals can be used successfully for producing formcoke. Putting this progressive method to industrial use at the Altayskiy and Bagleyskiy By-Product Coke Plants, however, has dragged on for many years.

The widespread implementation of promising methods of processing gas-caking coal, whose reserves, estimated at tens of billions of tons, are situated in conditions that are favorable for mining, will make it possible to substantially increase coking coal reserves.

13. Increasing coking coal reserves is also connected with the working of thin and ultrathin seams. The reserves of coking coal in the Donetsk basin that are unworkable owing to their thickness amount to 6 billion tons; in the Kuznetsk basin this figure is 15 billion, in the Karaganda basin--2 billion, and in the Pechora basin--7 billion. Approximately one half of these reserves lie at accessible depths. If we consider that work aimed at developing new methods of working thin seams is already under way in the Donetsk and Karaganda basins (augering machines, ploughs, etc.), then the importance of exploring such seams increases, even though exploiting them remains an extremely labour-consuming and expensive matter.

14. The wider use of thin coals that are rich in vitrinite for coking is yet another resource that can be used to increase the raw materials base of the by-product coke industry. At present around 2 million tons of this type of coal are being successfully processed in the Donetsk basin. In future, thin and lean coal from the Khalmeryuskiy Rayon in the Pechora basin, which contain 80-90 percent vitrinite, may be used for this purpose. Thin coals are also present in the Karaganda and Kuznetsk basins. Production studies into the use of thin coals in the charge along with K, KZh and Zh rank coals must be conducted in all these basins.

15. Reducing coal losses during mining, which for coking coals often reach 50 percent, will make it possible to sharply reduce shortages of this type of raw material.

16. The most realistic way of increasing power-generating coal reserves is to change conditions so that the ash-content limit can be increased. In the Ekibastuz basin, increasing the threshold ash-content from 45 to 60 percent made it possible to increase workable reserves by a factor of one and a half. There are a great number of deposits in the Ekibastuz region (Zhamantuz, Ayakmalaysor, Kosmurun) in which the coal horizons, consisting of alternating coal and carbonaceous rock, attain thicknesses of scores of metres. The reserves in these deposits are estimated at hundreds of millions of tons, but at present they are classified as unworkable because of their ash-content. Increasing the upper ash-content limit to 50-60 percent will make it possible to increase workable power-generating coal reserves that are suitable for open pit mining. Similar deposits are also known in other regions of the USSR, and these should be investigated by regional geological organizations.

17. The development of scientific research work aimed at identifying the distribution patterns of coal-bearing and coal basin formations is very important if the raw materials base of the coal industry is to be expanded. In the first place, investigation of the coal seam morphology, tectonics (particularly microtectonics), hydrogeology, and mining and geological conditions of deposits must be speeded up. Studies aimed at determining the presence of gas (including estimations of gas reserves), the physical and mechanical properties of coal and country rock, the danger of explosion, and the thermal regime of the earth's interior, must be continued. The resolving power of geophysical surveying methods must be increased.

Scientific and technical progress in the coming 5-Year Plan will affect all branches of coal geology from prospecting and estimation of reserves to

evaluation of deposits. Materials for deciphering high-altitude and satellite surveys are being successfully used for regional studies. The exploration of coal deposits will be accompanied by a wide range of geophysical studies, and an ever more widespread implementation of new methods: radio inspection between bore-hole, acoustic logging to determine the physical and mechanical properties of rock, selective gamma-gamma-ray logging to determine coal qualities, and seismic surveying for investigating the microtectonics of mine and quarry fields.

Small-diameter bore-holes (30-60 mm) will be used on a wide scale. Controlled and multi-hole drilling will be more widespread. At the same time, documentation is being coded, and drilling results processed on computers. New drilling methods are being developed and implemented on a wide scale: diamond drilling, drilling with hydraulic core transport, air-flush and aerated wash drilling in dry zones, high-performance hydraulic hammers. A new generation of high-capacity drilling rigs is being introduced. Developing geological laboratory bases and supplying them with equipment will play an important role in raising the effectiveness of geological coal exploration operations. Investigation of all questions related to the protection of mineral resources, underground and surface water, and the atmosphere will take on particular significance. All this will make it possible to satisfy more fully the constantly growing demands placed by the coal industry on the reliability of the coal reserves being explored.

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COMPARISON OF RAIL, PIPELINE COAL TRANSPORT

Moscow STROITELSTVO TRUBOPROVODOV in Russian No 12, Dec 86 pp 22-24

[Article by V. Ya. Faynveyts and P. V. Filippova, VNIIPIgidrotruboprovod: "Comparative Efficiency of Rail and Hydropipeline Transport of Power Coal."]

[Text] The development of the USSR's industrial forces related to the relocation of the raw materials base to areas of Siberia and the Far East requires a considerable increase in the volume of long-distance shipments. In this connection an objectively caused contradiction has arisen between the need for intensified development of the coal industry and the actual possibilities of transporting large masses of coal over long distances.

In many countries (the USSR, Australia, Brazil, Great Britain, the United States, West Germany, Japan, and others) scientific and technical and planning and design work is going on and the industrial application has begun of pipeline hydrotransport systems to ship various solid materials -- coal, ore concentrates, phosphorites, etc. In the USSR there has so far been no experience of operating hydrotransport trunkline systems. The successful functioning of medium- and long-distance industrial slurry pipelines in the USSR and abroad is evidence of the reliability and efficiency of this new type of transporting solid materials.

In 1983 VNIIPIgidrotruboprovod [All-Union Scientific Research Institute of Hydropipelines] was established within the Minneftegazstroy [Ministry of Construction of Oil and Gas Industry Enterprises] system and entrusted with conducting and coordinating scientific research and planning and design studies in the field of hydrotransport. In 1984 construction began of the 256-km-long Belovo-Novosibirsk coal pipeline. The original plan called for transporting a water and coal suspension as a 50 percent concentration. The plan was revised in 1985. Provision was made to transport a highly concentrated water and coal suspension with a plasticizer and intended for immediate combustion in power plant furnaces. Operation of the first phase of the startup complex is scheduled for 1987. The coal pipeline will be operated at full capacity in 1988.

The development of pipeline hydrotransport, like any major achievement of scientific and technical progress, requires substantial investment at the initial stages. Thus, the plan to construct a transcontinental system of coal pipelines from the Kuznetsk Basin to the Urals and the country's central districts will undoubtedly be very costly, but like any result of scientific and technical progress its goal is in the future.

As for the effectiveness of this new type of transport, comparative calculations with rail transport often turn out to the advantage of the latter. It happens that the railroad network developed over a century and a half handles growing volumes of bulk cargoes with lower capital outlays. It would appear that this difference cannot even make up for considerably lower operating costs.

Let us analyze the developmental trends of rail and pipeline transport, of which hydrotransport is one variety.

In the development of pipeline transport the leading place is occupied by the USSR and the US. These countries have 40 percent of the share of the total volume of pipeline construction. The pipeline network operating in the USSR and the US amounts to more than 70 percent of that in the world, and by effective length -- to more than 80 percent.

One of the most important laws of the dynamics of scientific and technical progress is the development of wholly new avenues of technology in an S-curve that models three stages of development (Fig. 1).

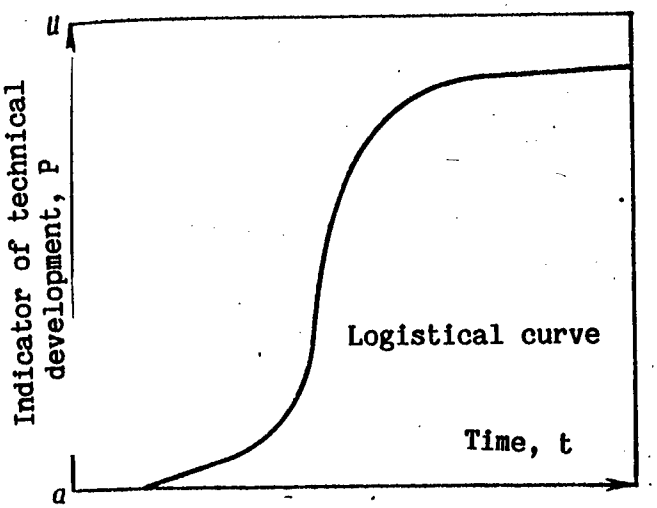

Figure 1. Logistical Curve.

The initial period is the emergence of new technology, application to a a particular field, and slow extensive development. Rapid extensive growth of application is then observed, as well as the penetration of the new technology into various spheres of industry, improvement in the quality indicators, and high effectiveness. The final period is marked by an end to extensive application, relative stability of quality indicators, decline in the indicators of intensification, and reduced economic effectiveness.

This curve can be approximated by a logistic pattern expressed by the equation (Footnote 1) (P. Hagget, "Geography: A Synthesis of Current Knowledge," Moscow, 1979, p. 358)

$$P = \frac{U}{1 + e^{a-bt}},$$

where P is the indicator of technological development; U is the upper limit of this indicator; e is the base of the natural logarithm (e=2.178); a is the lower limit of indicator P; b is the constant that determines rate of growth; and t is time.

Railroad transport, which has been in operation for a century and a half, is now in the third and final stage of its technical development. According to U. S. federal statistics, the growth rate has slowed, the indicators of extensive application have fallen, quality features and indicators of intensification have stabilized, and its economic effectiveness has dropped. Similar trends have also been noted in our country.

Pipeline transport, however, is going through the most intensive period of development and of improvement in efficiency.

The historical development of railroad transport in the United States began with the construction of the Ellicott's Mills-Baltimore railroad (13 miles and put into service in 1930), and in the USSR with the construction of the Peterburg-Pavlovsk railroad (27 km and put into service in 1837).

The U. S. railroad network reached its peak in 1916, when it equalled 266,000 miles, started to decline in 1940, and as of 1980 consisted of 157,000 miles.

In our country operating rail lines continue to increase. Where in 1913 they equalled 72,000 km, in 1984 they consisted of 144,000 km. However, even in our country the growth rate trend of the railroad network is slowing down.

In the Sixth Five-Year Plan the railroad network in the USSR grew by 4.1 percent, in the Seventh by 4.0 percent, in the Eighth by 2.3 percent, and in the first four years of the 11th by 1.6 percent. At the same time, the saturation of the railroads in the Soviet Union is considerably less than the maximum level in the United States.

Unlike the railroad network, the length of the U. S. pipeline network has grown (152,000 miles in 1960 and 173,000 in 1980). This phenomenon is also observable in the USSR, where, beginning in 1960, the pipeline network has

doubled each decade. In 1984 there were 243,000 km of pipeline in operation in the Soviet Union, of which 165,000 km were gas pipelines and 78,000 km were for oil and oil products.

Freight turnover in pipeline transport has been growing at a fast pace. In the USSR, between 1970 and 1984 it increased by a factor of 5.7 (from 413.1 to 2,367.6 billion ton-km). In the United States the total freight turnover of just oil and oil products in 1980 was higher than the 1960 level by a factor of 2.6 and reached 388 billion ton-miles.

In the USSR the freight turnover of railroad transport has virtually stabilized at the level of 3.6 trillion ton-km. During the Seventh, Eighth, and Ninth Five-Year plans its growth rate averaged 30 percent, only 6.2 percent in the 10th, and 5.8 percent in the first four years of the 11th.

The freight turnover of U. S. railroads declined by 2 percent from 1960 to 1975, but by 1980 it had increased by 25 percent and reached 932 billion ton-miles. Thus, with an overall reduction in the operating length of the railroads, traffic intensity N increased from 1960 to 1980 by a factor of 2.2. However, the absolute values of these indicators are considerably lower in the United States than in the USSR (Fig. 2).

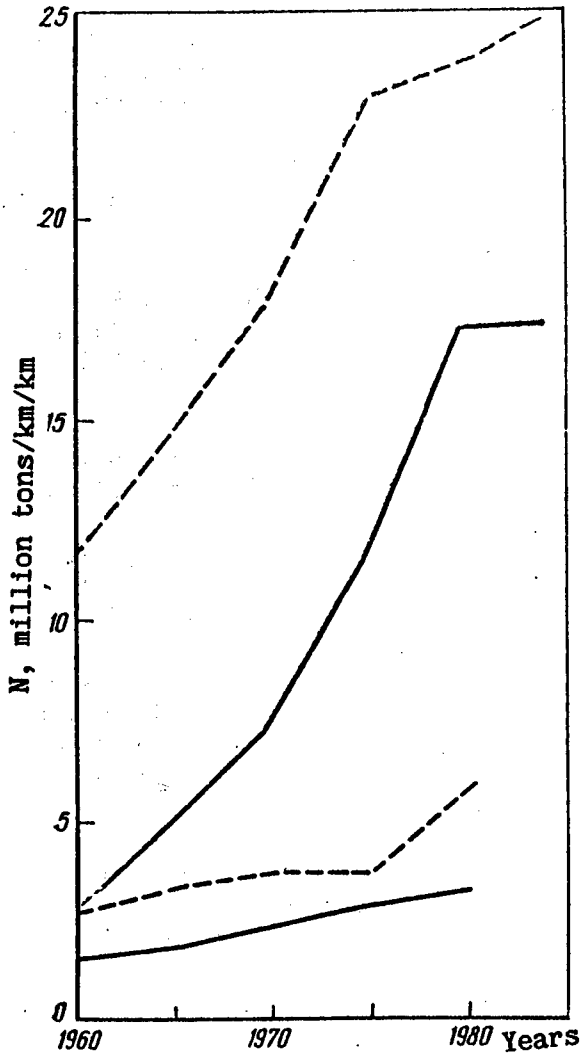

Figure 2. Intensity of Utilization of Rail (broken lines) and Pipeline (solid lines) Networks: light color for the USSR and dark for the United States.

The technical characteristics of railroad transport have stabilized, including freight train speed, average daily mileage of rolling stock, and consumption of electric power and fuel per unit of transport. Meanwhile, the technical indicators of pipeline transport have improved; there has been a noticeable increase in average pipe diameter and operating pressure. In the USSR 85 percent of pipelines are over 500 mm in diameter, and more than 43 percent are over 1,000 mm. Where, between 1970 and 1984 pipeline length increased by a factor of 2.3, effective length in our country increased by a factor of 5.2 in that period, including an increase of 3.8 for oil and oil products.

In railroad transport the growth rate of labor productivity is slowing down, the output-capital ratio is increasing, production cost of shipments is growing, and profits and profitability are decreasing. We can therefore say that the efficiency of railroad transport has stabilized, while pipeline transport has a potential for efficiency that may be realized in the 12th Five-Year Plan and in the long term.

Labor productivity P in pipeline transport is growing at a fast pace and by its absolute value it is an order of magnitude higher than for railroads (Fig. 3).

The output-capital ratio is less than that for railroads by a factor of more than three. The volume of investment in railroad transport in our country was 20.1 billion rubles in the 10th Five-Year Plan and 19.2 in the first four years of the 11th, while for oil pipelines the corresponding figures were 3 and 2.6 billion rubles.

The production cost of rail shipments, beginning in 1970, has increased per 10 ton-km net from 2.341 kopecks in 1970 to 3.097 kopecks in 1982; while for oil pipeline transport it decreased per 10 ton-km from 1.20 kopecks in 1960, to 0.96 kopecks in 1970, and to 0.80 kopecks in 1982. In absolute terms the production cost of oil pipeline transport is lower than for railroads by almost a factor of 4.

Profits in railroad transport decreased by 11 percent from 1970 to 1984, while profitability declined from 14 percent to 5.5 percent.

The high efficiency of pipeline transport is due to its physical and technical characteristics, which are wholly unlike those of other types of transport. When utilizing pipelines there is no requirement for rolling stock, and its functions are performed by a stationary structure (the pipe and the power facilities); an uninterrupted medium (the continuum) moves through a pipe, in contrast to the movement of the separate components and units of rolling stock in other types of transport.

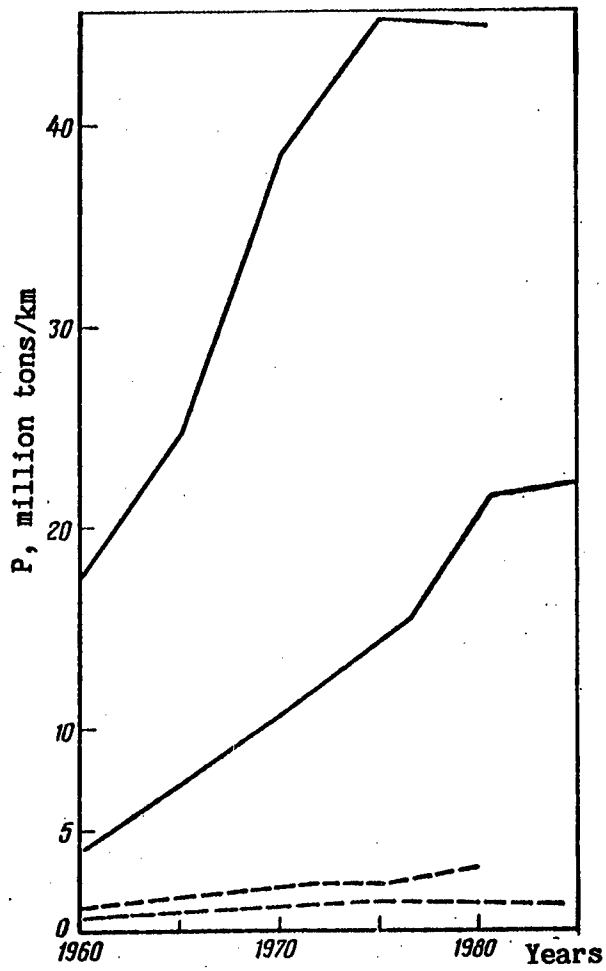

Figure 3. Labor Productivity in Transportation (designations are the same as in Fig. 2).

Pipeline transport ensures an even delivery of a product to customers on a daily and annual basis and virtually year-round and round-the-clock functioning of productive facilities; improved transport KPD [efficiency] of the system, as measured by the relative mass of useful freight to the mass of the system's movable parts; reduced losses en route and elimination of rolling stock exhausts into the atmosphere; and reduction in the size of the system and resultant savings in acreage alienated. The utilization of pipelines makes it possible to reduce labor costs for operation of the system when compared to railroad transport, frequently to wholly eliminate the need to move people along with rolling stock, and to improve working and living conditions for personnel working there.

Eliminating the dynamic interaction with the internal medium and contacts by people with moving stock guarantees improved reliability of the system. Thanks to the relatively small size of hydrotransport systems, the underground placement of the pipelines, and the simplicity of the engineering structures, their stability is considerably increased and diversification of transport is achieved.

These advantages are the reasons for expanding the sphere of using pipeline transport and of shifting from the pumping of liquids and gases to the transport of solid materials.

When moving solid materials in the form of a slurry through a pipe the moving continuum becomes inhomogeneous, which frequently reduces the economic efficiency of hydrotransport systems. In the normal case the product must be processed prior to delivery to the transport system (slurry preparation) and again processed (dewatered) after completion of the transport process. Not just the product moves through a pipeline, but also the carrier liquid, which serves as a sort of "rolling stock." The transported product has a corrosive and abrasive effect on the pipe, to reduce which corrosion inhibitors are added to the slurry. Because of the possibility of stratification of a slurry, the engineering design introduces limitations on speed and/or pipe diameter, which are reflected in the relative energy costs of the system. There are difficulties in regulating the transported flows when demand is uneven and in the initial period of operation.

The advancements of science and technology in our country and the successful experience of operating a number of trunk pipeline systems abroad make it possible to assert that this new form of transporting bulk freight retains all the main efficiency factors of pipeline transport.

The development of hydrotransport is due in the first place to the advantages inherent in all pipeline transport, secondly to growing demands for the trunkline transport of various cargoes, thirdly to the high technical level achieved by machine building, metallurgy, and other branches that supply pipeline transport with means of production, and fourthly to the availability of construction organizations that have experience in building major pipeline systems.

The hydrotransport of power plant coal has additional advantages, since it is essentially the transport of a new type of fuel -- a highly concentrated water and coal suspension. The burning of this fuel, as compared to pulverized coal, in the boiler units of power plants and by other consumers will improve the technical effectiveness of the process. Setting up a system for the trunkline hydrotransport of coal from areas of Siberia is an urgent task for scientific and technical progress that will have a decisive effect on the choice of a strategy for the development of the fuel-energy complex for the long term.

12697
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UDC 621.643+656/621.51

CONTAINER PIPELINE PNEUMOTRANSPORT OF MAZUT

Moscow STROITELSTVO TRUBOPROVODOV in Russian No 12, Dec 86 pp 24-26

[Article by A. V. Chernikin, Transprogress SKB [Special Design Office]: "Container Pipeline Pneumotransport of Furnace Fuel"]

[Text] Aspects of the transport of hot oil products in containers through pneumopipelines has been extensively treated in the pages of scientific and technical publications [1-4]. Among the array of various problems in this area, one of the main ones is to establish the intensity of measuring the temperature of the pre-heated oil products in the process of transporting them. Theoretically, this problem has been solved by studies [1 and 5], but the information published on experimental studies of the cooling of containers with pre-heated mazut relate only to small-size models less than 200 mm in diameter [2]. Experimental data on the temperature states of large-size containers being moved through large-diameter pneumotransport pipelines has not been presented in the literature.

The Transprogress SKB has performed a series of studies on the full-scale KPT-8 experimental-industrial pneumotransport system constructed in the city of Orekhovo-Zuyevo, and the basic layout is shown in Figure 1a. The system's transport pipeline 1 is a closed ring about 4 km long, located on which are a sluice station 9 and three bypass devices 2, equipped with sensor-signalizers of the passage of the container units. The vertical profile of the circular duct is shown in Figure 1b. The transport trunkline is made of steel pipe 1,220 mm in diameter.

Used as the source of compressed air needed to move the units are four type TV-175-1,6 air blowers located in the building of the air blower station 5. The discharge nozzles of the air blowers are connected in parallel to a common collector 6, which, with the aid of the requisite pipelines and appropriate air-shunting equipment, delivers air in the volumes required by the transport pipeline. Experiments were conducted on the operation of the second, third, and fourth air blowers, which made it possible to obtain the average rate of movement of container units through the circular pipeline within the limits of 14.4-33.5 km/hour.

Operation of the system can be controlled automatically or manually from a central dispatcher post with a console and a detailed graphic panel that constantly displays the location of the units in the duct and the wear on all the main components of the system.

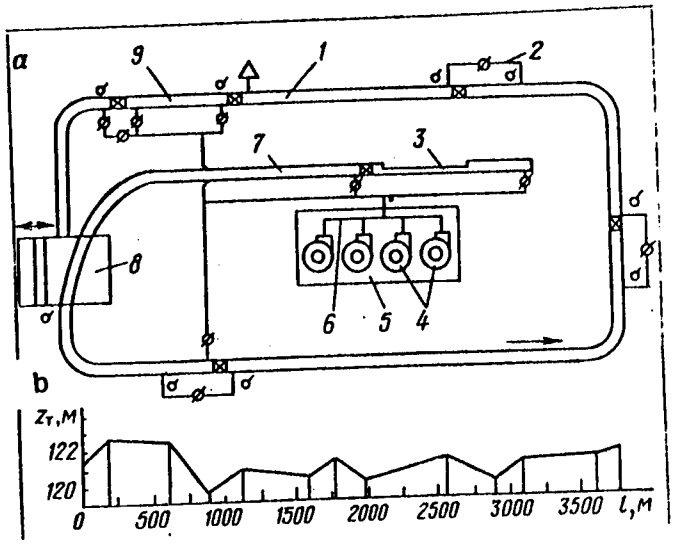

Figure 1. Basic Layout (a) and Vertical Profile (b) of KTP-8 Pneumotransport System

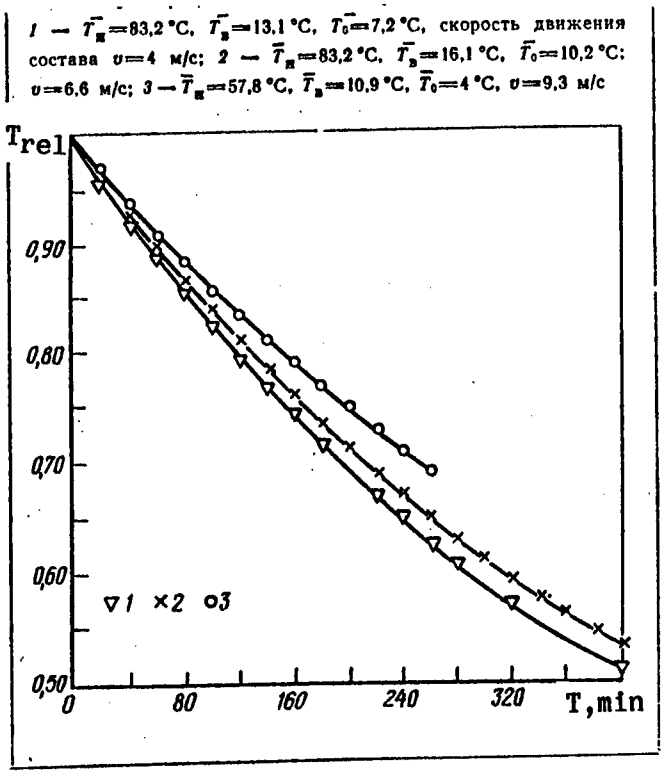

Figure 2. Change in Average Volume Relative Temperature of Mazut During Container Movement:

Key:

1. Velocity of units

For insertion and removal of units for inspection, repair, reforming, etc., the system has a branch pipeline 7 connected to the ring line 1 with the aid of switch 8. The end section of pipeline 7 is an open trough 3 that gives free access to the units.

The container units used in performing the studies were made up of a thermally uninsulated container with furnace fuel and a container mounted with on-board measuring and registering equipment and systems of commutation and electric supply. Two pneumocarriers were located on the edges of the units.

The temperature of the mazut and the air current impinging on the units were measured with the aid of 36 copper resistance thermometers, most of which were installed at various points on the surface of the container, and the rest in the gap between the volume being transported and the pipeline wall. The thermo-physical properties of the transported mazut, as determined by laboratory experiments, are shown in the following table.

Thermo-physical Properties of Furnace Fuel Utilized in Experiments

1. Свойства мазута	2. Температура, °С				
	20	40	60	80	100
3. Плотность, кг/м³	965	954	943	932	921
4. Коэффициент кинематической вязкости, см²/с	52,08	7,204	1,787	0,632	0,283
5. Удельная теплоемкость, Дж/кг·°С	1784	1853	1922	1991	2060
6. Коэффициент теплопроводности, Вт/м·°С	0,1401	0,1385	0,1370	0,1355	0,1340
7. Коэффициент объемного расширения 1/°С	$574 \cdot 10^{-6}$	$599 \cdot 10^{-6}$	$623 \cdot 10^{-6}$	$650 \cdot 10^{-6}$	$679 \cdot 10^{-6}$

Key:
1. Mazut Properties
2. Temperature
3. Density, kg/m^3
4. Coefficient of kinetic viscosity, cm^2/sec
5. Relative heat capacity, J/kg x °C
6. Coefficient of heat conductivity, W/m x °C
7. Coefficient of volume expansion, 1/°C

A similar description is given in study [5] of the instruments, temperature sensors, and other devices employed and the specifics of installing them and of the main elements of the methodology of conducting the experiments.

Checking the temperature sensors and recording the readings on a moving container unit was accomplished automatically and at intervals of three min. The experiments were terminated after a unit had run for at least 100 km.

On the base of the readings from the temperature sensors located within the shipping container the average volume temperature of the mazut $\overline{T}$ was found to be the weighted average for the volume of the oil product [5]. During the processing of the results of the research this computation was performed in sequence for several specific times in the conduct of each experiment, the sum of which made it possible to draw a picture of the drop in the average volume temperature of mazut in a moving container over time (and over the distance traveled by the unit).

The outside air temperature during a particular experiment (4-7 hours) deviated from its average value $\overline{T}_0$ by no more than 1-2°C, and thus there was virtually no change in the temperature condition of of the pneumotransport pipeline (after the proper heat conditions had been set up in it in advance). Furthermore, the initial temperature of the oil product T_H and the change in

temperature of the air flow in the transport pipeline were different for different experiments, and therefore to compare and generalize the data obtained the congealing process of the mazut was indicated by the dimensionless relative temperature

$$T_{rel} = \frac{\overline{T} - \overline{T}_B}{\overline{T}_H - \overline{T}_B},$$

where $\overline{T}_B$ is the average integral air flow temperature per length of the transport line.

The values for T_{rel} found on the basis of measurements made are shown in Figure 2 (the curves are drawn through the experimental points).

As shown in Figure 2, the intensity of change in magnitude of T_{rel} gradually decreased from 0.09-0.11 per hour at the beginning of the movement of the container units to 0.05-0.07 per hour at the end of the experiments. The average rate of fall of T_{rel} over the length of the course was 0.2-0.5 percent per kilometer.

The drop in the mazut's own average volume temperature in the experiments described was within the limits of 3-7°C per hour, while the average drop in was on the order of 0.1-0.3°C per kilometer. These the correctness of theoretical predictions made earlier [1 and 3] that dealt with the temperature drop of furnace fuels in pneumotransport container systems in pipelines with a diameter of 1,220 mm.

Thus the full-scale experimental research conducted and the results of research on oil transport operations [6] have convincingly demonstrated that the transport of hot oil products by pneumotransport systems is a wholly feasible task and can be achieved over considerable distances, thanks to the fortunate combination of the comparatively high velocities of container units and the relatively low intensity of cooling of the product being moved.

Utilizing systems of container pipeline pneumotransport in the national economy will make it possible to substantially reduce the inefficient shorthaul shipments currently in use and to considerably cut down on truck shipments, which will substantially contribute to solving the problem of transporting highly viscous and highly congealed cargoes. For example, the adoption of just one system with a productivity of 1 million tons per year and a transport range of 50 km will make it possible, when compared with truck transport having approximately the same capital costs, to reduce operating expenses, and therefore the production cost of delivery, by 35-40 percent, to free about 200 tank trucks, and to reduce the number of personnel by nearly a factor of 15. The annual economic effect from this is on the order of 1.3 million rubles and the annual savings in short-supply diesel fuel is 8,500 tons.

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12697
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CONSERVATION EFFORTS

QUESTIONABLE COAL COUPON DEALINGS

Kiev RABOCHAYA GAZETA in Russian 25 Nov 86 p 1

[Article by P. Polukhin, RABOCHAYA GAZETA correspondent Lozovaya, Kharkov Oblast: "Whoever Dared, Ate Up Three Rations"]

[Text] This bitter saying automatically comes to mind when we in Lozovaya begin a campaign to procure coal for everyday use.

Outwardly everything looks both proper and expedient. The gorsovet issues fuel coupons for coal to each individual home owner, and in Lozovaya there are thousands of them. Is this logical? It is logical. After all, though, the people who live in them, still work. Many of them are in railroad transport or in some other departments, which, through their own channels also provide the members of the collective with fuel coupons. Some, but not all. It thus turns out that in some homesteads, let us say, in the families of the railroad workers, coal for everyday use is piled up in plenty. In others, where there is only one fuel coupon, from the gorsovet, it is clearly inadequate.

It must be confessed that, with this sort of distribution, it happens that one of the citizens even speculates in coal. Can a fuel distribution like this be considered fair?

Meanwhile, it is very simple to find a way out of the situation. All the funds for everyday-use fuel should be concentrated in the same hands, with one manager. In our case it is the gorsovet. The coupons should be distributed strictly in accordance with the norms, by calculating per square meter of the facilities being heated in winter.

Incidentally, as a World War II veteran and pensioner, I receive coupons for coal on precisely this strictly substantiated norm. You know, there is quite enough coal! As for the metric area of individual housing systems, that is well known--the city inventory bureau stores the plans for each building.

I am sure that with fair distribution of fuel for everyday use we will not only restrain the speculators, but also save a considerable portion of it for the national economy.

12151
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REPUBLIC-WIDE CONSERVATION EFFORTS NOTED

Tbilisi ZARYA VOSTOKA in Russian 3 Dec 86 p 3

[Unattributed GRUZINFORM [Georgia Information Agency] article: "Prevent Excessive Consumption of Electricity"]

[Text] Because of the severe electricity shortage in our country, economic planners will have to make fundamental changes in the way energy is consumed. The only way the republic will be able to carry out its economic plans, meet its obligations, and embark successfully on the second year of the Five-Year Plan is if there is the closest possible daily scrutiny of how every kilowatt-hour of energy is consumed. However, many managers have not realized the importance and severity of the problem, according to pointed statements emanating from Georgia Communist Party Central Committee and Georgia SSR Council of Ministers meetings devoted to solving the problems associated with managing fuel and energy production and consumption. By using too much electricity, for example, users are forced to wait around for shipments of fuel in excess of quota, which, given circumstances at present, are impossible to make. They have to begin seeing that they must rely on their own resources without expecting they will get help from elsewhere.

Because of this situation, the operations of inspection agencies in charge of regulating fuel and energy consumption were reviewed. It was established that such agencies should not only identify various problems, but should locate and facilitate use of additional resources and take strict disciplinary measures against entities using too much energy, even it means cutting off natural gas, electricity, and petroleum supplies. Experience has shown that such measures yield the desired result. For example, after being cut out of the grid, the furniture complex and silk reeling factory in Kutaisi both took immediate steps to eliminate the causes of energy over-consumption.

The way fuel and energy resources are being used at the Rustav Cement and Gardabani Board And Prepared Roofing Material Plants recently became the subject of severe criticism. Both plants use kilns, but were heating them with electric heating equipment, and thus were not meeting their quota for conserving resources. It was made clear that the manager actually guilty of the above-noted offense, and not the enterprise, should be fined. There is no doubt but that this form of punishment will be more effective.

In November alone, more than 27 cases of excessive energy usage were recorded. Organizations subordinate to the Ministry of the Construction Materials Industry were fined a total of 2,170 rubles; total fines for the Ministry of the Lumber and Wood Processing Industry were 1,890 rubles; and the Batumi Sea Port was fined more than 25,000 rubles.

The degree to which Tbilisi's Leningrad and Gldanskiy regions were ready for winter operations was also studied. Serious problems came to light at the Stankostroitel [Machine Builder] Association, as well as at Elektroizolit [Electric Insulation], Tsentrolit [not further identified], and the plaster wall materials plants. It was noted that correcting the problems that were discovered would not cost much or require much effort, and that adequate attention and concern on the part of management would yield the desired results. Unfortunately, it is precisely this attention and concern that is missing.

The meetings produced concrete measures to make each manager personally answerable for excessive use of fuel and energy resources and identified ways to conserve the maximum possible amount of these resources.

13189
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CONSERVATION EFFORTS

INSPECTIONS UNCOVER WASTE OF ENERGY

Tbilisi ZARYA VOSTOKA in Russian 9 Dec 86 p 2

[Article by Varlam Muradeli: "Electric Power Must Be Conserved"; first paragraph is ZARYA VOSTOKA introduction]

[Text] For the last few years, winter has been a period of intense work for the republic power production system for three reasons: there is a basic shortage of capacities; power cannot be brought in from neighboring republics in the quantities necessary; and industrial, agricultural, and domestic consumption of energy is growing annually.

The situation has recently been made worse by the growing energy shortage that has resulted from the complexity of the nation's energy balance, as well as by cutbacks in the amount of energy coming into the network from the European area of the Unified Power Production System. The solution to this problem is to be scrupulously careful about how much energy is used. Party and soviet organs and republic ministries and departments have prosecuted a vigorous campaign to enhance energy discipline. All cities, regions, enterprises, and organizations have been assigned limits on the amount of energy they can use. In conjunction with representatives of industry, agriculture, and other areas, the appropriate agencies of the Gruzglavenergo [Georgian Main Power Production Administration] have produced a schedule prescribing specific times when enterprises and institutions must switch their power off. The purpose of this will be to maintain a normal energy situation for people while ensuring that the economy can function without disruption at the same time. Further steps to meet the above-mentioned goals include repairing equipment that consumes large amounts of energy and implementing organizational and technical programs to save power and reduce the demand for power during peak hours.

In Kutaisi, Batumi, and other cities, zone-level party and soviet organ conferences have taken place to outline energy conservation measures.

According to Roman Ushveridze, director of the Georgian SSR Main Power and Electrification Industrial Administration's Energonadzor [Energy Inspection Agency]: "Although the republic is paying more attention to and keeping closer tabs on energy usage, some enterprises are still not using energy efficiently. Every month, we find and correct examples of over-usage of energy at dozens of enterprises. Among the major enterprises that are particularly conservation-

minded are: the Tbilisi Electric Train Car Repair Plant; the Kutaisi Cotton Textile Production Association; the Metekhskiy Construction Materials Complex; and the Rustavskiy Cement Plant. Among those who are using too much energy are three facilities in Makharadze: an enterprise belonging to Gruzrembyttekhnika [Georgian Household Products Repair Agency]; Road Construction Unit No. 18; and the Passenger Car ATP [Automobile Enterprise]. Organizations which have not been able to keep energy consumption at the prescribed level are: the Karelskiy Greenhouse Farm, which is part of the agro-industrial complex; the Akhaltsikhskiy Canned Food Plant; the Arakva village collective farm in Akhalkalakskiy region; and the Goriyskiy raydorotdelenie [region road construction unit]. Of course we fined all of them, but that is not the solution. Instead, everyone has to realize that only by conserving energy will it be possible to ensure a reliable and uninterrupted supply of energy.

The instances of inefficient energy usage discovered during recent inspections are quite disturbing. Power has been improperly used at a total of 33 facilities in the cities of Poti and Marneuli, as well as in Tskhakaevskiy, Gegechkorskiy, Akhalkalakskiy, Ambrolaurskiy, Kaspskiy, Khashurskiy, Tetritskaroyskiy, Bolniskiy, Marneulskiy, and Sukhumskiy regions. For example, at a mechanical plant in Tsakhaya energy was used for heating. And exactly the same misuse has occurred at the Akhalkalakskiy Administration for Community Services and Facilities, the Ambrolaurskiy Vehicle Station, the Khashurskiy Mobile Construction Unit No. 20, the Tetritskaroyskiy Cheese and Butter Plant, and elsewhere. A considerable amount of energy is used on unnecessary daytime lighting, particularly at public eating facilities and commercial establishments in Gegechkorskiy region and in the city of Marneuli. And the Metekhskiy Construction Material Complex, which is in Kaspskiy region, used an excessively high output generator, thereby wasting hundreds of thousands of kilowatt-hours.

We should note here that most of these examples of inefficient usage take place because enterprises and organizations are poorly prepared for the cold weather. And this state of unreadiness has occurred in spite of a competitively-oriented inspection of facilities that was organized to determine how prepared people were to deal with winter, as well as to identify and eliminate weak points in the fuel and energy usage plans of industry, agro-industry, commerce, the service sector, and other areas. In the course of the inspection, a major effort was made to mobilize all resources in order to insure that all facilities and establishments could function normally in any weather. However, it would seem that some places decided at that time to simply sit back and wait and, because they failed to marshall their fuel resources then, are now forced use electricity for other than prescribed purposes.

Because of the current strained energy balance, we cannot afford to waste electricity. Hence, heads of enterprises and other facilities must take immediate steps to fill in any gaps and make sure heating systems are able to operate smoothly.

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CONSERVATION EFFORTS

PARTY WORKERS NOTE STATUS OF ENERGY SUPPLY

Tbilisi ZARYA VOSTOKA 14 Dec 86 p 3

[Unattributed GRUZINFORM [Georgia Information Agency] article: "Winter Tests"; first paragraph is ZARYA VOSTOKA introduction]

[Text] Recent cold spells have not caught energy production personnel unawares. Because they prepared carefully for the autumn and early winter season, the power production sector can function almost without interruption, providing industrial enterprises and residences with energy.

The above-cited statement represents the assessment of the Georgia Communist Party Central Committee Special Task Force on Solving Problems Associated with Regulating Fuel and Energy Production and Consumption, which held a regular session recently. Those who attended the session studied the state of affairs in the fuel and energy network and carefully examined the reasons behind still existing shortcomings.

It was noted that for the most part the republic's heat producing facilities were performing up to par and working at maximum capacity. For example, the electricity production index at the Tbilisi GRES is moving towards 102 percent, while work is underway at the Tkvarchelskiy GRES to push electricity production rapidly up.

At the same time, the situation with respect to water reserves has become difficult. Low winter water levels mean that reservoir water must be used sparingly to keep it available for peak electricity usage periods. It is precisely for this reason that we must undertake a major effort to ensure a stable hydraulic situation at the Ingurskiy GES.

As before, the sparing usage of fuel and energy are a pressing task. In order to accomplish it, every possible conservation technique will have to be mobilized, while instances of wastefulness must be stopped and punished without hesitation.

The persons attending the session expressed a fundamental, party-oriented opinion of instances of wastefulness in which thousands of kilowatt-hours and calories had been lost. Over the last month or so, the Energy Surveillance Service alone has discovered 173 cases of inefficient usage of electricity in

industry and identified 22 instances of electricity consumption in excess of limits. Among the offenders are the Batumi Shoe Production and Sales Firm, the Akhaltsikhskiy Canned Foods Plant, and a number of other enterprises. The heads of these energy-wasting plants were given a stern warning not to repeat their offense.

The republic's gasoline situation has become quite serious. In many areas, gasoline shortages have left vehicles standing idle, leading to breakdowns in schedules for deliveries of products vital to the economy. At the same time, however, this situation can largely be attributed to wastefulness. Evidence of this can be found in the nearly 500,000 rubles which enterprises and organizations were fined for using too much fuel and lubricants, as well as in the coupons for 36,000 liters of gasoline that were taken away.

This winter will be a difficult test. As was stated at the session, the only ones who will pass it are those who show the greatest sense of responsibility in doing their jobs, the highest level of discipline, and a professional attitude toward their work.

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BRIEFS

ODESSA HEAT LINES IMPROVED--Odessa--Good heat preservation is being ensured since the main heat conduit of the largest housing tract in Odessa--the settlement imeni Kotovskiy--was reconstructed. Its pipes, laid at a minimum level beneath the surface of the ground, deliver energy from the boiler houses to the citizens' apartments without any substantial losses. For a long time the pipes, laid at a depth of six meters, from fall to spring proved to be inundated by underground water, which picked up the heat, and they often broke down. Many efforts and funds were spent to repair the leakages and construct temporary networks, and meanwhile the radiators in the apartments were cold. The lines in the settlement imeni Kotovskiy have been laid at a depth of 30 centimeters, but in trenches made of reinforced concrete sections. It is done this way: the conduit is installed and pipes coated with heat-insulation and anticorrosion "sleeves" are laid in it. The heat conduit is covered on top with concrete slabs, and then a thin layer of earth is poured over it. It is completely inaccessible to ground waters and precipitation. The line, constructed in this way, as tests have shown, reduces heat loss in transport by 20 percent and simplifies repairmen's access to it. [By V. Veprik] [Text] [Kiev RABOCHAYA GAZETA in Russian 25 Nov 86 p 1] 12151

CHERKASSY DAIRY INDUSTRY REFORMS--On 15 October this year our newspaper published the material of the inspection brigade, "They Didn't Have Time To Look Around," which spoke of the shortcomings in energy-resource conservation at the enterprises of the dairy industry in Cherkassy Oblast. As V. Popov, general director of the Cherkassy Dairy Industry Association, informed the editors, the decision has been made to prepare the technical documentation and construction of purification works in 1987-1988, so that the condensate from the juice vapors at the Smelyanskiy Milk-Canning Combine, after appropriate processing, will be sent to the TETs for re-use. [Text] [Kiev RABOCHAYA GAZETA in Russian, 25 Nov 86 p 1] 12151

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MINISTRIES RESPOND TO COAL SHIPMENT COMPLAINTS

Moscow GUDOK in Russian 13 Dec 86 p 1

[Article by GUDOK's Department of Traffic and Freight and Passenger Operations: "Delivered to the Surface...and Silence: Readers Await the Response of the Ministry of the Coal Industry to Reports by Correspondents from GUDOK and TASS"]

[Text] A coal conveyor. Its precise rhythm depends primarily on the two most important sectors of the national economy--rail transport and coal mining enterprises, on the coordination of their interactions, their desire to meet each other, their skill in placing a common goal above departmental interests. Here the MPS [Ministry of Railways] and Minugleprom [Ministry of the Coal Industry] are partners with equal rights and responsibilities.

Recently there have been many publications on the pages of our newspaper about this topic. Questions concerning the interaction of related industries were incisively posed in joint "raids" conducted by correspondents from GUDOK and TASS throughout the nation's most important coal mining regions and which are being served by their railroads. The state of affairs in the mines and on the steel mainlines was examined, that which is advanced and useful was noted and that which retards and destroys the rhythm of the conveyor was criticized.

Unfortunately, the evaluation of the newspaper articles by the two ministries was by no means unambiguous.

The article "Northern Shoots of the Seeds of Indifference" (14 August); here the causes for delays in coal shipments from the Pechora Basin are related. In part, it told of how development of Mulda and Vorkuta Stations had been on-going for years. The publication received a reply from the deputy chief of the MPS's Main Administration for Traffic, A. Chernyugov. He informed us that during the last few years, the Ministry of the Coal Industry had not devoted the attention necessary for the transportation factor in planning its expansion of coal mining facilities in the Pechora Basin. As a result of this, the necessary funds were not allocated for research and development operations and for compiling design estimate documentation for development of the adjoining stations of Mulda and Vorkuta in connection with construction of the "Vorgashorskaya No. 1" and "No. 33 Vorkutinskaya" mines, although suitable capital for development of these stations was called for in the construction projects for these mines.

The MPS requested the management of USSR Minugleprom several times to speed up working up the blueprints for developing Mulda and Vorkuta. According to a communique from the Ministry of the Coal Industry (a letter dated 18 Jun 86, No. 1-3-13 p/915, signed by com. Shchadov), in drawing up the annual plans, capital will be transfered to MPS for rennovation of Mulda Station, beginning in 1987. For the same year, apportionment of limits to research and development operations to draw up the working documentation of Vorkuta Station's development through use of Minugleprom resources has also been called for.

It would seem that things have already moved off dead center.

But the telephone soon rang at the newspaper office. It was S. Lyulintsev, chief engineer of the USSR Ministry of the Coal Industry's Main Administration of Hauling and Transport.

The essence of his call was as follows: is it necessary to respond to the newspaper, and what should he answer since at the ministry they were beginning to doubt the expediency of developing and expanding the coal loading stations at Mulda and Vorkuta?

For a similar development it had been proposed that at the paper we come out with an article, basing this not entirely understandable opinion of the ministry on the facts.

There were no more calls from Minugleprom, and there were no replies to the newspaper articles.

There were the articles "Production Is Insured, but Hauling Isn't" (10 October) and "In the Labyrinths of Departmental Cul-de-Sacs" (21 October). They touched on the disproportionate development of the shaft and open pit mines which is being tolerated by the USSR Minugleprom in comparison with the development of access lines and the coal shipping stations of Kuregesh, Meret and Yerunakovo, which are already unable to cope with the fuel shipments from the basin.

Deputy Minister V. Butko informed the newspaper of measures taken by MPS. At the same time, he informed us that, in spite of repeated appeals of the MPS to management of the USSR Ministry of the Coal Industry, up to now there have been no radical changes to speed up work to develop the stations adjoining the access tracks at the coal mining enterprises.

At Yerunakovo station, all work under the title of construction of the "Yerunakovskiy" Open Pit Mine were to have been completed back in 1984. But on 1 November 1986, of 9.73 million rubles, only 7.06 million had been spent. Four station tracks had not been constructed, nor had servicing and car preparation stations, work on electrical centralization of switches and signals had not been finished and living quarters for a supplemental force of railroad workers had not been turned over.

It was planned that in 1985, rail transport facilities at Kuregesh-2 Station would be put in service. They are necessary to service the "Baydayevskiy" Open Pit Mine. But of 3.4 million rubles, only 1.44 million has been spent.

Track development and station electrification has not been been completed, and construction of the service and technical buildings, the car preparation station and electrical centralization of switches and signals has not begun.

The lines of a reply by G. Matyushin, deputy director of the Main Administration for Railroad Construction in the Urals and Siberia, the department heading up the work in this region, resounded in unison. In designing lines Nos. 9 & 11 at Meret Station, the Minugleprom's "Kuzbassgiproshakht" Institute did not coordinate the elevation of the track's bed with Mintransstroy's [Ministry of Transport Construction] "Lengiprotrans" Institute, which is designing the development of Meret Station under title from MPS. Therefore track No. 9 was torn up, and they are currently correcting the track bed according to a coordinated project. It is impossible to lay track No. 11 because the "Kemerovougol" Association did not raze their residences and other facilities in the construction zone. The client, Minugleprom, did not issue technical documentation for artificial structures for Uba Station and the Uba -- Pesterevo line, it didn't set aside ground for construction.

Starting in April of this year, the Main Administration for Railroad Construction in the Urals and Siberia has repeatedly requested that Minugleprom look into the situation which has developed. But up to now, it has not resolved a single one of the questions which have been posed.

In its decree "On the Operations of the Ministry of Railways and the RSFSR Ministry of Housing and Municipal Services to Prepare Rail Transport, Housing Facilities, Underground Mains Services and Pipes for the Fall/Winter 1986-1987 Period," The CPSU Central Committee noted that, although the plan for fuel shipment is being fulfilled, coal reserves in the Donetsk, Kuznetsk, Karaganda and Kansko-Achinsk Basins exceed set standards significantly. This tells us that within the complex national economic complex, transport links together all links of the economy and that carefully thought out and coordinated joint actions of transport workers and production workers are needed.

But, judging from the position taken by USSR Ministry of the Coal Industry, it has yet to realize this fact totally. And it is impossible to operate today following yesterday's principle of "It's our job to mine coal, and yours to haul it."

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RAILROADS FAULTED IN LAG OF COAL DELIVERIES

Moscow SOVETSKAYA ROSSIYA in Russian 10 Jan 87 p 1

[Unattributed article: "Don't Blame the Frost"]

[Text] Late Friday evening, TASS correspondents made phone calls to the headquarters of industries that have had the heaviest work loads lately. All were asked a single question: "How is the situation with respect to heat, electricity, and railroad car unloading operations?"

V.I. Khalatin, head of the Central Dispatcher Administration, answered our call to the Ministry of the Natural Gas Industry. According to him: "Heavy frosts have hit large parts of the country and forced us to change operations at this key element of the industry's headquarters. The Central Dispatcher Administration is the point through which all information on natural gas recovery, processing, and transportation passes. It is here that key decisions, generally about where to increase gas deliveries, are made.

"For example, because of a shortage of fuel oil, Ufa is asking for increased deliveries, sending its request to dispatchers in Gorkiy, Ukrainia, and the area around Moscow. And in order to supply the additional volumes of blue fuel to the cities and villages of the country, gas field workers in western Siberia, central Asia, and Orenburg are running field operations around the clock. The reliability of the industry's operations and its readiness for the harsh winter are both being checked.

"Our main task now is to make maximum usage of the resources we have on hand. And we have been successful so far. Gas recovery is proceeding ahead of schedule. Every 24 hours we send out 80 million cubic meters more than the amount prescribed in the Plan. I might add that there have been no breakdowns in the natural gas supply system.

"We are working closely with all industries. Timely shipments from one region to another are being made in order to ensure normal operations at enterprises and keep people's homes warm. We work most closely with power production personnel. For example, today we raised the pressure in the pipeline supplying Uralmash [Ural Heavy Machine Building Plant]. And we have dozens of cases like this to deal with every day. We received a call from Leningrad telling us that a poultry factory did not have enough gas. What could we do? You can't let the

chickens freeze. So we helped them out. And we also helped out Bolshevik, a kolkhoz in Serpukhovskiy that supplies the capital with vegetables."

At the USSR Unified Power Production System's Dispatcher Administration, F.Ya. Morozov, head of the administration, answered our questions. He said: "We have a tight schedule. All our power machinery is working at full capacity. Heating lines are operating at peak levels to heat houses; we've upped the amount and temperature of hot water. We have special teams constantly in place to handle any breakdown, no matter what it takes to restart operations. I doubt that it would be possible to say the personnel at any particular power station were doing a better job than those at any other. Essentially all of them are working diligently and conscientiously.

"Under difficult weather conditions, the USSR Unified Power Production System has once again showed how well it can perform with us manipulating the flow of energy in the most economical way. But we are still a little disturbed by the situation at certain thermal power stations in Belorussia, Ukrainia, the central Volga region, and the central part of the country, where fuel oil shipments have not been made on schedule because of breaks in railroad operations. There are currently not enough fuel oil reserves here for more than 24 hours.

"I would like to make yet another appeal to enterprises and citizens. Don't forget about conserving electricity and heat, even in this cold weather."

We also spoke with V.I. Dubovik, corresponding member of the USSR Gosagroprom [State Agro-Industrial Industry Agency], who informed us: "The situation in Russia with respect to unloading agricultural goods from railroad cars has gotten quite serious. More than 800 cars are standing idle on sidings or at stations. And even though the number is much lower than at the end of last year, the situation remains critical, since the unloaded cars contain food, feed, and raw and other materials that rural workers and processing enterprises need desperately.

"What makes the situation even more difficult is that cargoes in hundreds of the cars have frozen into solid blocks of ice that even chain saws sometimes can't cut. But it does not behoove our suppliers to ascribe the situation to the cold weather. The whole problem could have been averted if the manufacturers of mineral fertilizer, for example, had cooled their fertilizer before loading it, which is what they are supposed to do. Other shippers should have followed the appropriate technical procedures as well.

"In Vologda, Gorkiy, and Kirov, fuel delivery shortages have become a serious problem, particularly since the machinery needed to unload railroad cars cannot operate without fuel. Yet despite these problems, the collectives in our enterprises are engaged jointly with party, soviet, and economic organizations in a vigorous campaign to completely unload the cars and provide rural workers with the supplies they need."

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SHORTAGE OF COAL BLAMED ON RAILROAD WORKERS

Moscow IZVESTIYA in Russian 12 Jan 87 p 2

[Article by M. Berger and M. Krushinskiy, Moscow: "Frost--Red Light: Why the Cold Slows Up Rolling Stock Traffic"]

[Text] A mist of frost hangs over the capital. Clouds of white vapor, intermittently, when the doors are opened, spill out from the underground stations, shroud the stairway gaps of underground passages and hide drivers from view at intersections. The passers-by are in a hurry--collars pulled up, caps pulled down: it is cold!

In one of the corridors of the Mosuglesnabsbyt Territorial Administration there is a dense group of people. The line moves quickly, but almost as soon as a person emerges from the office, someone else comes in from outside to replace him and, massaging his frozen fingers, takes his place in the "queue." People hurry here for heat--but not only for themselves personally. There, behind the doors of the guarded office, thousands of tons of precious fuel are distributed among the many enterprises and institutions of Moscow and the Moscow area.

"We are suffering! Almost 200 children are freezing, the temperature in the buildings is about 15 degrees at most. You cannot get normal coal, they send dust, which does not even burn in our boiler house...."

S. Yudichev, director of the Zimenki Boarding Home in the Moscow suburbs, which has been turned into a pioneer camp during the school holidays, complains: "if you want to get warm--go to the coal base at Cherkizovo yourself, hurry, ask for a little better coal."

"They do not have time for sorting--the equipment is antiquated and they cannot cope with loading and unloading," K. Yakovenko, senior engineer of one of the Moscow production-training garages, comes into the conversation. "We ourselves are already prepared to go their aid with shovels...."

That day, tens of thousands of loaded cars came to a stop on the country's railroads. The frozen coal, destined to heat homes and work places, had to be warmed up itself. Because of the severe frosts, the mechanisms stood idle and the freight cars piled up on the enterprise approach tracks, threatening to disturb

the economic relations between sectors and regions. Lev Alekseyevich Voronin, deputy chairman of the USSR Council of Ministers, held an operations selector conference at the dispatcher hall of the Ministry of Railways, where the directors of many ministries and departments gathered. With the push of a button, chiefs of roads and divisions from the Far East to the Ukraine, ministers of republics, chairmen of oblispolkoms and directors of plants and production associations were in communication. Hundreds of people invested with power throughout the country took part in the conversation, harsh at moments, with a single purpose: how could the serious situation on the railroads be overcome.

The problems of the Cherkizovo coal base, which turned into misfortune for the Zimenki pioneer camp, and of dozens of other institutions in the capital and the suburbs, constituted a small but integral component of the "ring of frost" which circled the entire country. That same day a chain of 43 unloaded gondola cars filled with coal stretched out at the approach tracks to the base. What prevented the unloading?

"The base is not included in the system of the Moscow-Okrug Division of the railroad," says A. Kuznetsov, Cherkizovo station chief. "In July of last year it transferred to the jurisdiction of the Lefortovskiy Industrial Railroad Transport Enterprise--LPZhT. Problems have arisen since then. They are "closed up" and our plan goes head over heels! We are deprived of bonuses and for them--what? Fines? In December alone we were issued penal sanctions for over seven thousand, and the sense in that--none!"

It must be acknowledged--we checked: the traffic service was fully prepared for intense cold and snow drifts. The switches were neatly swept off--special hollows between the cross ties will gain time in case of a "snow--all hands!" situation. Units for air-blast cleaning of the tracks have been set up. The snow-clearing units have come to a standstill at their stations with the silent serenity of mine sweepers. The people are not complaining about the frost. We passed the carriage underframe of a freight car along with the yardmaster, Gennadiy Sergeyevich Knyazev--one-and-a-half kilometers of track appeared to us as an exhausting "circle of light." After all, he is no longer a young man, and here he is opening up dozens of kilometers per shift! "Our job is a soldier's job--what has to be done has to be done...."

Why is it, then, that this calm, soldierly, wise prudence does not emerge and appear at the crucial moment everywhere? A comparative analysis of the "traffic" and "unloading" services distributed in the vicinity suggests the idea: the reasons for the obvious differences in their "readiness for action" this winter should be sought in the economic rather than in the psychological sphere.

Departmentalism...it became the subject of extremely serious criticism at the selector conference at the dispatcher hall of the Ministry of Railways. Are the frosts and the snowstorms really taken into consideration with interoblast and interministerial boundaries? In answer to the question as to the reasons for the standstills on the Sverdlovsk Railroad, the deputy chairman of the Sverdlovsk oblispolkom came forth with the retort: some of these cars, he said, are on the territories of other oblasts. "I address you precisely," the leader

said. "The railroad administration is located in our city. It is not really so difficult to pick up the telephone and come to an understanding on what is going on with colleagues at Penza or Perm."

Departmentalism...the Cherkizovo coal loading ramp is the only one in the capital. The fuel can be emptied through the lower hatches of the cars directly onto the ground: it is recovered from the railway line vertically for several meters. Alongside the rails is a footbridge of 300 paces: in order to cross it one must be somewhat of an acrobat--the dilapidated structure sways, and will collapse if you even look at it. The technical equipment of the base is well-matched with this "suspension" bridge. A "decapitated excavator with an openwork boom has been stuck into the ground head-down: the motor is choked up--there is no fuel calculated for frost. The 16-ton hoisting crane, just back from repair, is also choked up. At another crane, as they explained to us, the shaft in the main reducer, as they explained to us, has "flown off"--again, two weeks after major repair at a plant in Roslavl. In front of the heap of coal is a long line of machines standing in line for loading and, just slightly removed, an even more impressive line of coal cars awaiting unloading. There is no point in running them onto the loading ramp: the free-flowing load has long ago frozen, and it must first be steamed and loosened up with special equipment.... Why has the base proved unready for today's cold?

"In past years it was a little easier," says M. Rakhmatulin, chief engineer of the PPZhT [Industrial Railroad Transport Enterprise]. "It is not only a matter of the weather. After all, the base was on the balance sheet of the Moscow Railroad and the "transport workers" were its guardians in every way. They were supported by the people and the equipment, and the locomotive shop helped with the repair. But now...."

This is a very important point: what now? Last summer, as has already been said, the base moved out of the hands of the Moscow-Okrug Railroad and the PPZhT, which belongs to the Moscow Municipal Territorial Promzheldotrans Association. The movements from the main administration are to the Main Administration of Industrial Railroad Transport, in other words, from one main administration to another main administration of the same ministry--the Ministry of Railroads! It would seem, what has changed? Both departments have enough equipment, people and financial resources to equip and "put on their feet" a good dozen bases resembling the Cherkizovo one: on the scale of a main administration, its work volume, as mathematicians say, is low to the point of vanishing. For the transport workers, however, the shutdowns at the base can seriously damage the overall picture of the indicators, as happened during this "Christmas" cold snap. The "industrialists" are only paying off fines. The result: "gloomy lines of cars waiting for unloading, automated machines--for loading and people--for long-awaited warmth.

Just who was the initiator of the dramatic act of transferring the base from hand to hand? The present owners, in their words, were not exactly burning with desire to become the owners of such a neglected object, but in the end they yielded to the persuasions of the former owners, and now they cautiously complain about them: they palmed something off, they say, without having put it into proper order. For some reason the thought has not occurred to either

them or the others or the general ministry management that this shaky, swaying footbridge and these lines of unloaded cars hang like fetters around the neck of both the ministry and its clients, who are not to blame for anything.

A fierce blizzard sweeps over the Kuzbass. The gondola cars, intended for loads of Kuznetsk coal, are one-third filled with snow. Scraping it out is additional heavy work. What is to be done? "In order to speed things up, request permission to pour it directly onto the snow," the far-away voice of the railroad director from Kemerovo reaches those sitting in the dispatcher hall of the Ministry of Railways. "Just how can it be unloaded then, have you thought about that" L.A. Voronin asks the counter question. "Wet coal, congealed, turns into a solid slab. People are waiting for it, they are freezing --you must think of them and not of departmental indicators!"

It is bad when it is not the needs of living people that come to the fore, but the dead figures of accounts and summaries. They complain in Cherkizovo: the Kuznetsk coal often arrives substandard, without the proper preventive finishing, which makes the work of unloading, hard enough even without that, more difficult. Alongside the loading ramps, like museum exhibits, lie two solid anthracite slabs weighing 1.5-2 tons each: it was apparently not worth the trouble to abandon them there, at Kemerovo, in a gondola car, so they were extricated here, in Moscow...

When we call bureaucratic barriers "departmental", we most often mean "interdepartmental"--those which separate, at the minimum, various sectors of the national economy. But here, "interdepartmental" matters are within the framework of a single ministry! The Ministry of Railways has been converting to paying for itself and self-financing for a year. Will the economic levers of management help to eliminate the dead-end barriers between its individual subdivisions? Will these bureaucratic "brake shoes" lying across the rails disappear? Apparently, yes. This is a year later, though, and winter is here!

The selector conference lasted exactly one-and-a-half hours, having begun and ended precisely according to schedule. For the thousands of people along the steel mainlines that stretched from the western boundaries of the country to the shores of the Pacific Ocean, it conveyed a declaration of "all-hands" work. There was no stopping for rest, including those who had days off. It was proposed that the directors of enterprises and local organs of authority assign people and equipment according to the first priority requirement of the railroad workers. All forces and means to combat the emergency situation! "Are measures being taken." Very good. It is not measures that are required, however, but results. You will report on them at the next 'operations meeting' on Tuesday...."

Yes, these days on the railroad you cannot manage without overtime work and without additionally drawing in workers and employees of the "nonrailroad" enterprises. One would like to hope that, given this, people will not freeze and catch cold, that all the conditions will be created for them and selfless work will be paid for in full accordance with the legislation.

Sitting in the dispatcher hall, we remembered the visitors from Mosuglesnabsbyt. "They themselves were ready to come to the aid with shovels...." That was, incidentally, not a cry of despair, but a totally sober attempt to comprehend what was going on and to help as much as their strength would permit. "Our job is a soldier's job--what has to be done has to be done...." It is known that a common misfortune brings people together and unites territories and departments more surely than the most modern means of communication. In trying days the need for prolonged calls to action usually fades--the "human factor" goes into action of its own accord. I should like, however, for there to be somewhat fewer of this type of days, nights and emergency situations.

12151
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RAILWAYS COLLEGIUM REVIEWS S&T PROGRESS, SHORTCOMINGS

Moscow GUDOK in Russian 13 Dec 86 p 2

[Unattributed report: "Utilize the Industry's Scientific Potential Efficiently]

[Text] A few days ago at a broadened session of the Ministry of Railways Collegium, the directors of scientific research and the planning and surveying institutes, rectors of transport VUZ's, planning and design bureau managers, head engineers of the railroads and leading scientists and specialists considered ways to intensify the industry's knowledge, to strengthen its bond with production in light of decisions from the 27th CPSU Congress. Deputy Minister of Railways V. S. Arkatov, I. V. Kharlanovich, Chief of the Technical MA and A. L. Lisitsyn, Director of VNIIZhT [All-union Scientific Research Institute for Rail Transport] presented papers.

Handling the growing number of shipments, improving work quality and efficiency, and bringing the industry to a position of leadership in the world within a short period, as has been planned, urgently require decisive restructuring, the development of decisions which are new in principle and development and incorporation of highly productive equipment and progressive technology. In order to steer a firm course toward intensification of production based on technical progress, the work of the scientific research and planning-and-design sections, and higher education institutions must be radically restructured, the efficiency of their activity must be increased substantially and the bond between science and production should be decisively strengthened.

It was noted at the Collegium session that the industry's scientific and technical potential is being utilized as yet at a slow pace, by no means completely and inadequately efficiently for a radical re-tooling of transport production. The development and incorporation of new equipment and technology is frequently protracted for long years, and as a result, the innovations are obsolete and do not yield the anticipated effect. The path is a lengthy one: scientific research -- design development -- production of prototypes -- testing -- development -- incorporation into production on a mass scale. Miscalculations in scientific research and research and development planning, as well as the lack of coordination generate shallowness of thought and result in sissipation of efforts and funds.

The MPS [Ministry of Railways] main administrations manifest their role as client weakly when working out research and development topics. The materials presented by scientists, designers and project engineers are often not examined with the requisite exactions. As a result, inferior, inefficient developments are at times adopted for incorporation. The Main Administrations of Railway Traffic, Locomotives, Railroad Cars, Computer Technology ans Subways are guilty of not completely realizing everything which was planned in industry scientific and technical programs this year. The main administrations are weakly concentrating the efforts of scientists and specialists on solving key problems in development and improvement of the industry's operations. This relates primarily to heavyweight train traffic, development of automated control systems, increasing train speeds, automation and mechanization of labor-intensive processes and the incorporation of modern technical diagnostics and robot equipment.

In the VNIIZhT and the Main Administrations' Research and Development Bureaus, it is obvious that inadequate attention is being devoted to intensification of the research and the developments based on widespread utilization of automated design systems, mathematical modeling, contemporary means for testing innovations, etc.

The scientific potential of knowledge at the VUZ's is being realized extremely inefficiently; many developments here are a long way from modern day requirements. And it is in the scientific institutes that a significant part of our doctors and candidates in the sciences who study transportation problems are situated. What is being developed in the VUZ's seldom finds broad application in practice rapidly. It is years now that a device for synchronized control of joined trains, which was developed by DIIT [Dnepropetrovsk Institute for Rail Transport Engineers], a flow line for technical disgnostics of the condition of diesel locomotives using endoscopes, which was developed at KhIIT [Kharkov Institute for Rail Transport Engineers] and methods for protecting parts from corrosion, which has been proposed by specialists at NIIZhT [Scientific Research Institute for Rail Transport--may be loose usage by author, since this particular institution has been changed to TsNII MPS--Central Scientific Research Institute of the Ministry of Railways--according to the 1977 edition of Slovar sokrashcheniy russkogo yazyka] have yet to be incorporated.

In recent years, the link between industrial knowledge and academic has weakened significantly. Little research and development which is truly revolutionary really innovative and promising is being done. The existing experimental base for the scientific research, educational and research and development sections in the industry does not meet modern requirements.

"The General Plan for Development of Science and Scientific Service for Transport in the Long Term until the Year 2000" was examined at the session. Concrete proposals for radical restructuring of industrial science with the aim of concentrating the creative forces and material and financial resources for the accelerated development and incorporation of major, highly efficient equipment and technologies were discussed. Scientific production complexes and associations should play an important role. The primary directions for technical progress were determined.

V. S. Pasternak, Chief of the Transport and Communications Department of the CPSU Central Committee, I. A. Shinkevich, chairman of the Central Committee of the Union of Rail Transport and Transport Construction Workers and responsible officials from the CPSU Central Committee, USSR Council of Ministers, Gosplan USSR, USSR Committee for People's Control, the State Committee on Science and Technology and scientists from the USSR Academy of Sciences participated in the Collegium's work.

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